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FACIAL RECOGNITION TECHNOLOGY

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GENERAL MESSAGE

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From: NEUMAYER, RICHARD W   Telephone No.:5-6071
        POLICE OFFICER
        127 - RESEARCH AND DEVELOPMENT DIVISION

On Behalf   JAMES K. HICKEY
Of: ASSISTANT DIRECTOR
            RESEARCH AND DEVELOPMENT DIVISION
            5-6071

Message: Department members are informed that Department Notice D13-11, entitled
           "Facial Recognition Technology," has been issued and is available on the
           Department Directives System. This directive informs Department members of the
           availability of facial recognition technology for investigative purposes. Post in C.O.
           Book. To be read at roll call for five consecutive days.

Attachments:

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I.   PURPOSE

This directive informs Department members of the availability of facial recognition technology for investigative purposes.

II.   GENERAL INFORMATION

Facial recognition technology used by the Department accomplishes facial matching by creating a template of mapped geometric points from an existing image. The software uses an algorithm that maps the facial image and then compares it to those images within the comparison database. The software then ranks the highest scoring mugshots to the suspect image.

III.   UNITS WITH FACIAL RECOGNITION TECHNOLOGY

Facial Recognition Technology (FRT) software is being used in the Bureau of Detectives - Area Detective Divisions, Bureau of Organized Crime, and Crime Prevention Information Center (CPIC).

IV.   RESPONSIBILITIES

The Bureau of Detectives is responsible for investigative follow-up involving images for FRT. Policies, training and protocols will be developed and maintained by the Bureau of Detectives.

V.   PROCEDURES

When preliminary investigating officers determine that photographic or video evidence exists that has a facial image that might be identified through FRT they will:

A.   Notify the responsible Area Detective Unit.

B.   If requested, prepare a supplementary report informing followup investigators that an image is available and whether it has been inventoried. If the image has been inventoried, provide the inventory number of the evidence.

C.   Inform the Area Detective Unit where the image may be located if the digital evidence has not been inventoried. Notification will be recorded in their Automated Incident Reporting Application (AIRA) report..

Authenticated by: JKH

Garry F. McCarthy
Superintendent of Police

13-067 RWN

FACE Plus Case Management

User Guide

Table of Contents

Getting Started

Welcome to FACE Plus Case Management

Welcome to FACE Plus Case Management by DataWorks Plus. FACE Plus provides accurate, reliable identification with the latest and greatest in facial recognition matching accuracy and tools to manipulate images and compare images.

Case Management

Track and store multiple search scenarios in a case. You can input and manage multiple views of probe images taken from JPEG single image files as well as AVI and MPEG video files. Then you will be able to create a variety of searches with different probe images and data field selections for filtering. Each search will be saved. Select a combination of searches to review a blended result based on match scores.

Image Enhancement

Images can be edited to provide even more accurate results by marking the eye locations, cropping the images to be similar, correcting image brightness, and other basic editing functions. Pose correction and lighting normalization is also available, allowing you to search facial images that were once unsearchable.

Facial Comparison

Compare images side-by-side or edit copies of images for easier viewing or to clarify certain details. You can overlay two images to view distinct images, or view a "curtain" image, which displays the left portion of one image and the right portion of the other image.

Log In To the System

Double-click the Facial Recognition icon to launch the application. The logon screen will be displayed.

The logon screen will prompt you for a user name, password, and site selection. The site can be selected by clicking on the drop down list. If there multiple sites are available, click the site you want to work with to select it. Your system's administrator will provide your logon information. Note that you may have access to one or more sites and you may have different logons per site.

The additional options available on this screen are:
- **OK** will log into the system once the user name and password have been entered.
- **Reset** will clear anything entered in the user name and password fields.
- **Exit** will close the system.

After entering the logon information, click **OK** to access the program. The Sessions screen will be displayed.

Sessions Screen Overview

After you enter a valid user name and password, the Sessions screen will appear.
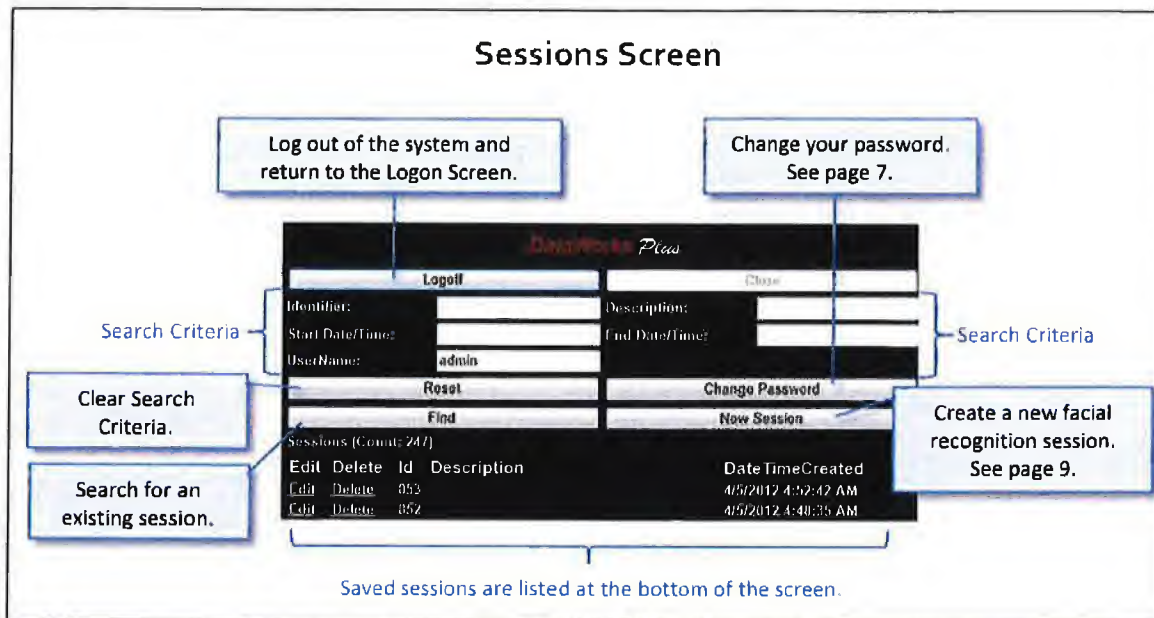
There are several buttons located on the Sessions screen.

- **Logoff** logs you out of the system and returns you to the Logon screen.
- **Reset** clears information entered in the Identifier, Description, Start Date/Time, or End Date/Time fields.
- **Find** is used to search and view existing sessions. You may enter criteria in the Identifier, Description, Start Date/Time, or End Date/Time fields to search on. If you leave all fields before clicking **Find**, all sessions will be displayed.
- **Change Password** allows you to change your password.
- **New Session** allows you to create a new facial recognition session.

Change Password

The **Change Password** button allows you to update your current password. Note that this does not allow you to update a password that has been forgotten. To change your password, click **Change Password** from the Sessions screen.

Enter your old password. Then enter and confirm your new password. Select **Cancel** if you would NOT like to change your password. Otherwise, select **OK** to proceed to accept the changes to your password.

Starting a New Session

Face Plus allows you to store multiple search scenarios. You may upload and manage multiple views of probe images taken from single image files as well as video files. You will be able to create a variety of searches with different probe images and data field selections for filtering. The system supports over 40 different fields for data filtering. Each of the searches will be saved as a separate session.

New Session Screen Overview
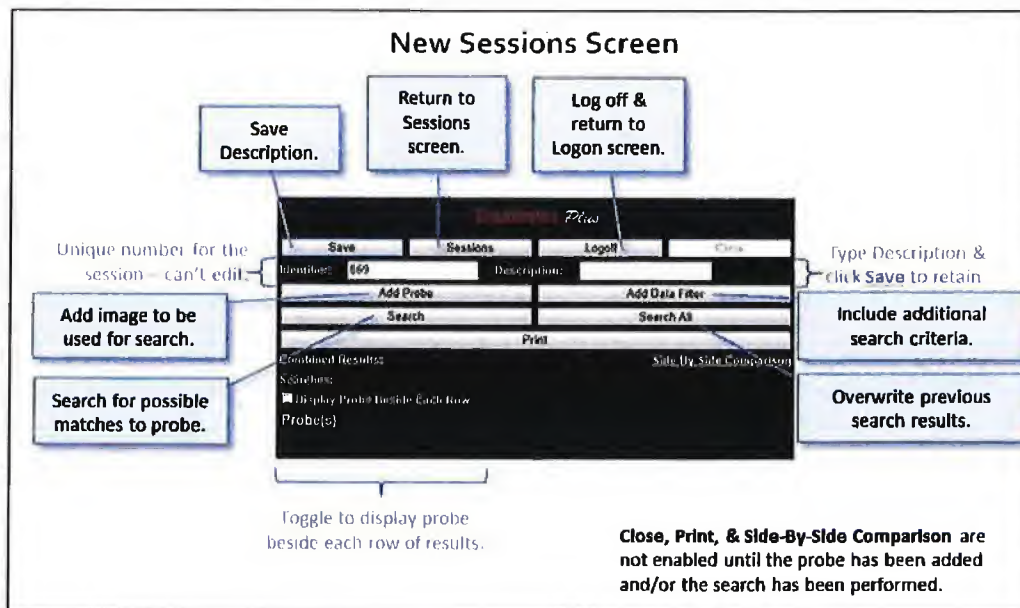
- **Save:** All sessions are automatically assigned an **Identifier** and saved. However, if you wish to add a description, be sure to click **Save** to save the description you entered for the session.
- **Sessions** returns you to the Sessions screen.
- **Logoff** logs you out of the system and returns you to the Logon screen.
- **Identifier** displays the unique number that has been automatically assigned to this session. You may not edit this field.
- **Description** allows you to enter a description for the session. Click **Save** to save your information.
- **Add Probe** allows you to locate the desired probe image to be used for the facial recognition search. Please see *"2. Load Probe Image(s) from Single Images or Video"* on page 9 for more information.
- **Search** searches the database for possible matches to the probe image(s). If you have added another probe to a saved session, clicking "Search" will retain the results of the original search and only add the matches from the new probe.
- **Add Data Filter** allows you to include additional search criteria, such as name or gender in order to narrow your results.
- **Search All** searches the database for possible matches to the probe image(s). It differs from "Search" in that it will perform a new search on all probes, overwriting the original search results. Generally, you will not perform a "Search All" unless you have added many new records to the database and want to overwrite the previous search results.

Steps for Creating a New Session

Following are the steps for creating a new facial recognition session. More details about each step are included in the following sections. In addition, you may add data filters to narrow your search results.

1. Click **New Session** from "Sessions" screen – see page 9

2. Load Probe Image(s) from single images or video – see page 9

3. Edit probe image(s) if needed – see page 11

4. Search databases and view results – see page 19

Optional: Add data filter(s) if needed – see page 20

1. Click New Session from "Sessions" screen.

Click **New Session** to create a new facial recognition session.

2. Load Probe Image(s) from Single Images or Video

Next you need to select the image to be used for the facial recognition search. Click **Add Probe.**

Click **Add Probe** to select the image to be used for the search.

The "Image Upload" screen will be displayed.

You may upload a single JPEG image file or you may extract a frame from a video file to search on.

Note: Only JPEG images are supported for facial recognition searches. If you are using a non-JPEG image type that is natively supported by Windows, such as a bitmap image, then the system will automatically attempt to convert the image into JPEG format before searching.

Upload Single Image File

To upload a single JPEG image file, click **Browse** to locate the image. You will be prompted to select the image.

Browse to the appropriate location, select the desired file and click **Open**. The probe image you selected will be displayed.

Upload Image from Video

To upload an image from a video, click **Video**. The "Video Frame Grabber" screen will be displayed.
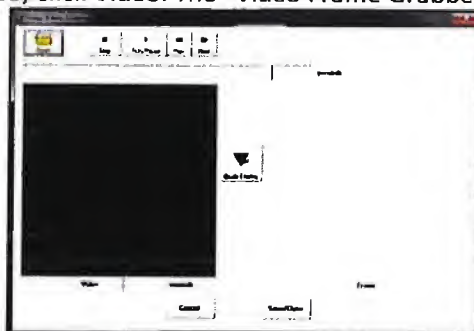
Click **Open**.
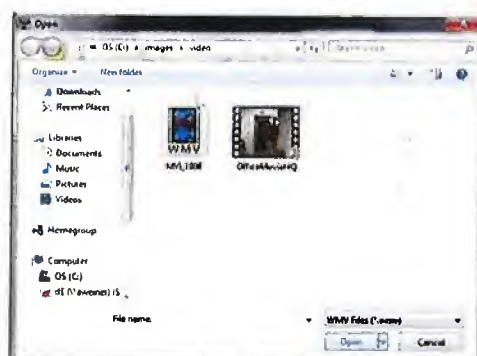
Browse to the desired file and click **Open**. The video will automatically play. Click the **Grab Frame** button to extract a particular frame. The frame you have captured will be displayed on the right side of the screen. You may use the playback buttons to replay or pause the video until you get the frame you wish to use.

When satisfied, click **Save/Close** to upload the frame as a probe image.

3. Edit Probe Image(s) if Needed

The Probe images can be edited to provide even more accurate results by marking the eye locations, cropping the images to be similar, correcting image brightness, and other basic editing functions. Pose correction and lighting normalization is also available, allowing you to search facial images that were once unsearchable. If the probe image is satisfactory, proceed to **4.** Search Databases & View Results on page 19.

Editing or Enhancing Probe Images

If needed, images can be edited to provide even more accurate results by marking the eye locations, cropping the images to be similar, correcting image brightness, and other basic image editing functions. Pose correction and lighting normalization is also available. Two options allow you to access the editing tools:

- **Edit and Add:** Allows you to edit a copy of the probe image. The edited image will be an additional probe image. The original will remain.
- **Edit and Replace:** Allows you to edit the probe image. The edited image will replace the original.

Click either **Edit and Add** or **Edit and Replace**. A screen similar to the following will be displayed.

There are several menu options available at the top of the screen, as well as several toolbar buttons.

File
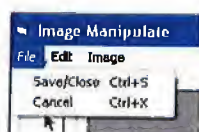
The **File Menu** allows you to either **Save/Close** the changes you have made to the image or **Cancel** out of the Image Manipulate window. These options are available as buttons on the bottom of the screen as well.

Edit
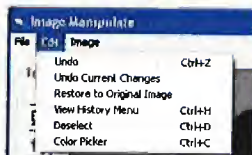
The **Edit Menu** provides the following tools:

Undo: will undo that last change that was made.

Undo Current Changes: will undo all changes made since you last saved the image.

Restore to Original Image: will undo all changes that you have made to the image.

View History Menu: this tool will open a menu at the right side of the image manipulate window that will display all of the changes that have been done to the image. From this menu you can choose to undo specific actions that were done to the image.

Deselect: will deselect the portion of the image that you have selected.

Color Picker: turns your mouse arrow into a color picker that allows you to choose a color within the image. The selected color will be displayed in the Color box at the bottom of the screen.

Image

The Image Menu provides the following tools:

Rotate: opens the Rotate window. For more information, please see *"Rotating Images"* on page 54.
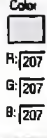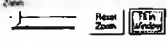
Flip Horizontal: this reverses the image horizontally.

Flip Vertical: this reverses the image vertically.

Add Noise: this opens the noise window. For more information, please see *"Adding Noise to Images"* on page 54.

Toolbar

Image Manipulate Screen - Toolbar	
	Selection Arrow allows you to select different portions of the screen or to click on items and move them.
	Magnifying Glass will magnify the portion of the image that you are hovering over when you right click.
	Crop Tool allows you to make a selection and discard that area around it. For more information, please see *"Cropping Images"* on page 51.
	Color Picker allows you to pick a color from the image that you are working with.
	Paint Brush allows you to paint onto the image.
	Lasso Tool allows you to make a free-hand selection.
	Magic Wand Tool automatically selects an area that you click.
	Paint Bucket allows you to dump paint over a selected area. If no area is selected it will paint over the entire image.
	Sharpen Image: This allows you to sharpen the image. Sharpening seems to bring out image detail that wasn't there before by emphasizing the edges of an image. It increases the contrast between each pixel and its neighbors. You will be prompted to enter a sharpening value. Move the slider on the bar to the left or right or type in a percentage to sharpen the image by. Select **OK** to apply to adjust the image. For more information, please see *"Sharpening Images"* on page 52.
	Contrast: This allows you to adjust the contrast of the image. Contrast is the difference in brightness between light and dark areas in an image. You will be prompted to enter a contrast setting. Move the slider on the bar to the left or right or type in a percentage. Positive values increase the contrast of the image; negative values decrease the contrast. Select **OK** to adjust the image. For more information, please see *"Adjusting Image Contrast"* on page 53.
	Brightness: This allows you to adjust the brightness of the image. Brightness adjusts how light or dark and image appears. You will be prompted to enter a brightness setting. Move the slider on the bar to the left or right or type in a percentage. Positive values will lighten the image; negative values will darken the image. Select **OK** to adjust the image. For more information, please see *"Adjusting Image Brightness"* on page 53.
	Saturation: This allows you to adjust the saturation of the image. Saturation is the "purity" of the color. Fully saturated colors are very rich and bright. Less saturated colors are more gray. You will be prompted to enter a saturation value. Move the slider on the bar to the left or right or type in a percentage to change the saturation of the image. Click **OK** to apply the adjustment. For more information, please see *"Adjusting the Saturation of an Image"* on page 53.
	Hue: This allows you to adjust the hue, or color, of the image. You will be prompted to enter a hue angle. Depending on what number you enter, the color will be adjusted across the hue circle by that many degrees. Click **OK** to apply the adjustment. For more information, please see *"Adjusting the Hue of an Image"* on page 54.
	RGB Balance allows you to adjust the individual RGB values of an image.
	Grayscale allows you to adjust the RGB values for the grayscaled image.
	Auto-correct Image will automatically correct the image as needed.

Image Manipulate Screen - Toolbar	
	Pose Correction allows you to create a 3D model of the face. From the 3D model, you may adjust the 3D model to optimize the pose and lighting of the image, which can then be used to find matching records. For more information, please see **"Pose Correction"** on page 14.
	Color Swatch: This is the default color for paint brush, paint bucket, background and foreground colors. You can adjust the color using the RGB values or you can double click on the swatch to change it.
	Zoom allows you to zoom in and out of the image as necessary by adjusting the slider position. **Reset Zoom** will return the image to the original size. **Fit in Window** will make the entire image visible from the view window.
	Left Eye and Right Eye can be used to mark the eye locations. The Cognitec search engine will use these locations to find matching records; however, it is not necessary to mark the eye locations.

Saving

When you are finished working with the image click **Save/Close** and the changes that you have made to the image will appear in the lineup. Note that the changes are done to a copy of the original image; you cannot alter the original image. If you want to discard that changes that you have made to the image click **Cancel**.

Pose Correction and Light Normalization

The Pose Correction tool allows you to create a 3D model, which will allow you to search facial images that were once unsearchable. The following example shows how you can create the model and manipulate it to create a searchable image. First, click from the edit screen.

You will be prompted to select the view of the original image. Click the graphic that best matches the pose of the original image.

Select the graphic that best matches the pose of the probe image.
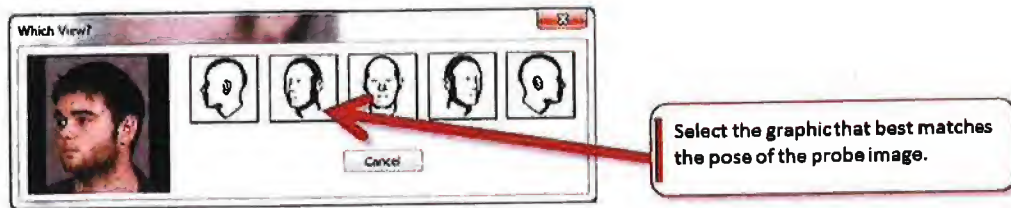
The image will be loaded into the pose correction/light normalization screen.
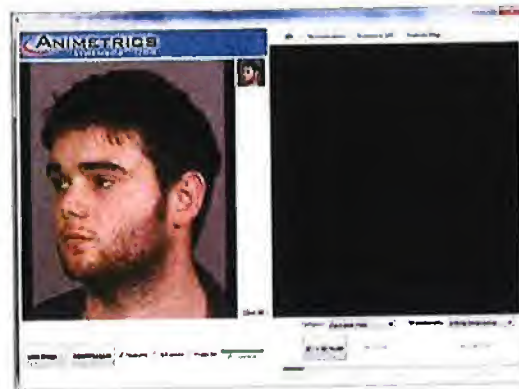
The accuracy of the 3D models generated is dependent upon the accuracy of the 2D feature points that overlay the original images. The feature points are displayed on the image as red, green, and gray crosshairs. Verify that the red crosshairs are in the correct place (eyes, chin and ear). The green and gray crosshairs may be moved if you wish to fine-tune the image. If you wish to move the feature points, refer to the following section: *"Adjusting Features (Optional)"* on page 15; otherwise, proceed to *"Generating the 3D Model"* on page 17.

ADJUSTING FEATURES (OPTIONAL)

Select the **Feature Map** tab to display a model with correct feature point placement.

Click the **Feature Map** tab to display a model with the correct feature point placement. When you click one of the crosshairs on the probe image, the crosshair on the Feature Map model will be highlighted in green to show you the proper placement.

The Feature Map displays the proper anatomical locations for each point. You may refer to it while adjusting the location of the selected crosshair. When you click one of the crosshairs on the probe image, the crosshair on the Feature Map model will be highlighted in green to show you the proper

placement. The green and gray crosshairs may be moved if you wish to fine-tune the image. To reset the feature points to their original locations, click **Reset Features** below the original image.

Primary (Red) Points

Click and drag any of the red feature points to their proper location. When the mouse is released, the green and gray "secondary" features are recalculated in real time based on the "primary" red features. This method of feature point adjustment will be sufficient to generate an accurate 3D model in most cases.

Feature Fine Tuning

The green and gray secondary features can also be moved if desired. To enable the secondary features, check the **Advanced** checkbox. The secondary features may now be adjusted by clicking and dragging with the mouse. The red primary features may also be moved, but if you adjust them when the **"Advanced"** box is checked, they system will not automatically recalculate the green and gray feature points. The green features indicate the subset that have either been detected or manually adjusted by the user. The blue/gray set is projected from the generated 3D model. To view the entire set of 3D projected features, check the **Projected** checkbox.

Resetting Features

To reset the feature points on an image to the original detected locations, click the **Reset Features** button below the image viewport.

Hiding/Showing Features

To toggle hiding/showing of the feature points on an image, click on the **Features** checkbox below the image viewport.

When you have finished adjusting the feature points, click the **3D** tab. Proceed to *"Generating the 3D Model"*.

Generating the 3D Model

Once the feature points have been adjusted (if necessary), make sure the **3D** tab has been selected and click the **2D->3D Model** button to generate the 3D model. The progress bar at the bottom of the screen shows the status of the generation process.

Click **2D->3D Model** to generate the model.
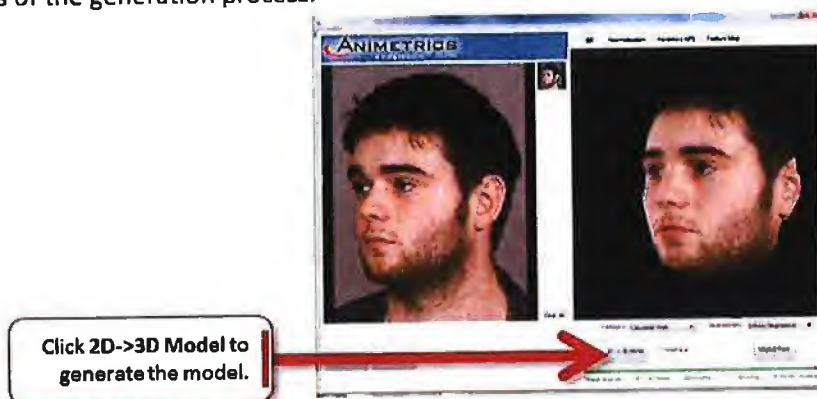
If necessary, click the **Neutral Pose** button to make the image a straight-on image.

Click the **Neutral Pose** button to make the image straight-on.
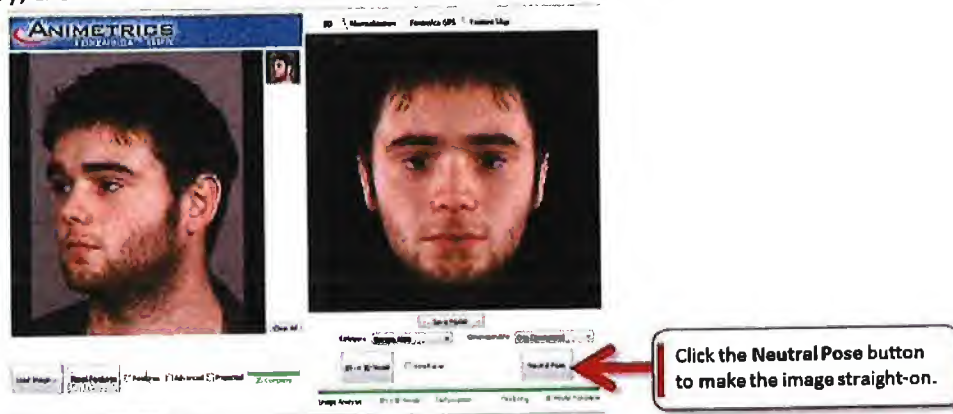
When finished, click **OK** on the **Pose** screen to the right of the 3D model.

Click the **OK** button to exit the 3D model screen.
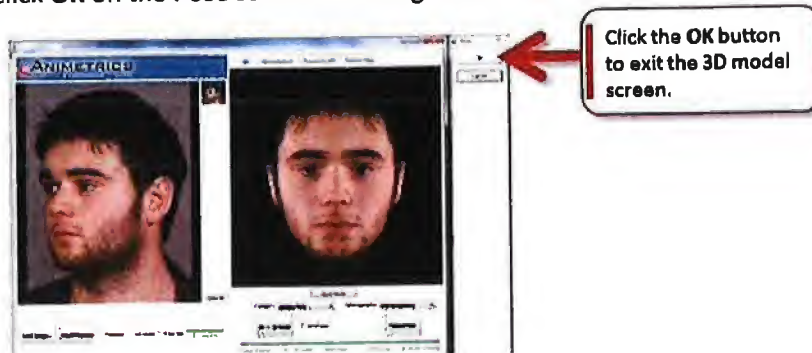
The revised image will be displayed in the Image Manipulate screen. Click **Save/Close** to load the edited probe image.

Click the Save/Close button to exit the Image Manipulate screen and load the edited probe image.

Optional – Rotating or Translating the Model
You may rotate and translate the 3D model with your mouse. Click the left mouse button, hold and drag to rotate the model. Click and drag the right button to translate the model. Click and drag with the middle button to move the model towards or away from you (zooming in and out).

Left mouse button rotates the model.

Right mouse button translates the model.

Middle mouse button moving up zooms in on the model.

Middle mouse button moving down zooms out on the model.
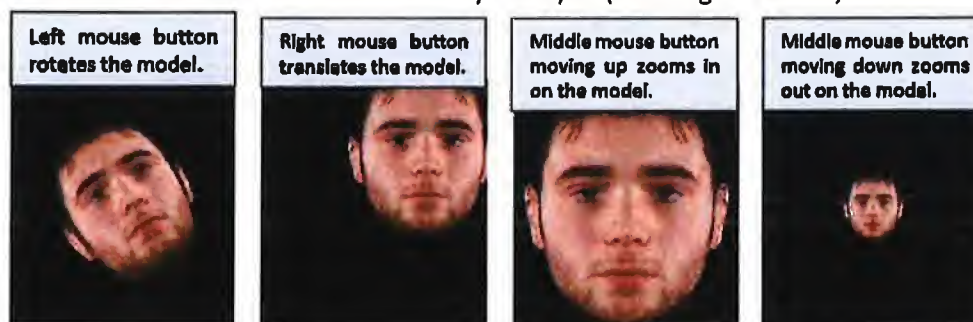
Optional: To save the model, click **Save Model**. You will be prompted to enter the file name. Browse to the location where you'd like to save the file, enter a file name, and click **Save**.

Optional
Click the Save Model button to save the model image to another location.

Note: More options are available from the 3D model screen. For more information, please refer to Appendix B for more information.

4. Search Databases & View Results

After you have uploaded and edited the probe image(s), click **Search** to find potential matches.

Click **Search** to search for matches.

The Search Progress screen will be displayed.

FACE Plus provides a multiple engine approach, which uses both Cognitec and NEC search engines to deliver optimal facial recognition accuracy. When the search has completed, the potential matches from each engine will be displayed.

Results Screen Overview

This area displays the combined results based on the parameter selected from the drop-down list.

Check to display the probe image beside each row of results.

Probe Image: The blue border indicates that this probe image has been selected and will be the probe image used when using the additional comparison tools.

Click to view a side-by-side comparison of the probe image and each image listed under "Combined Results". See page 21.

You may specify which search results to display – All, only Cognitec, or only NEC.

Use to page through the results.

The top number is the Matching Score.

Compare - see page 27
Chart Compare - see page 36
Data and Images - see page 48
Linked Images - see page 49
Mark for Review

Combined Results are displayed at the top left of the screen. You may specify the parameter that will be used for determining the combined results from the drop-down list. Choices are Above Minimum

Threshold, In All Results, In All But One, In All But Two, and Marked for Review. The images that are included in Combined Results will change depending on which option you select. You may view a side-by-side comparison of the selected probe image and each "Combined Results" image by clicking **Side By Side Comparison**, which is located in the upper right corner. Beneath each search result image is a matching score and several tools that you can use for more detailed comparisons to the selected probe image.

Optional: Add Data Filter(s) If Needed

To narrow your search results, you may enter additional search criteria. Click **Add Data Filter**.

Enter specific search criteria such as sex, race, height, and other physical characteristics to narrow the search results. Click **Save/Close**. The filtered results will be added to the bottom of the screen.

Side by Side Comparisons

Combined Results are displayed at the top left of the screen. You may specify the parameter that will be used for determining the combined results from the drop-down menu. Depending on your system's configuration, the choices may vary. The images that are included in Combined Results will change depending on which option you select.

First, specify the images included in "Combined Results" by selecting a parameter from the drop-down list.

Next, Click **Side By Side Comparison** to view a side-by-side comparison of the probe image and each image listed under "Combined Results".
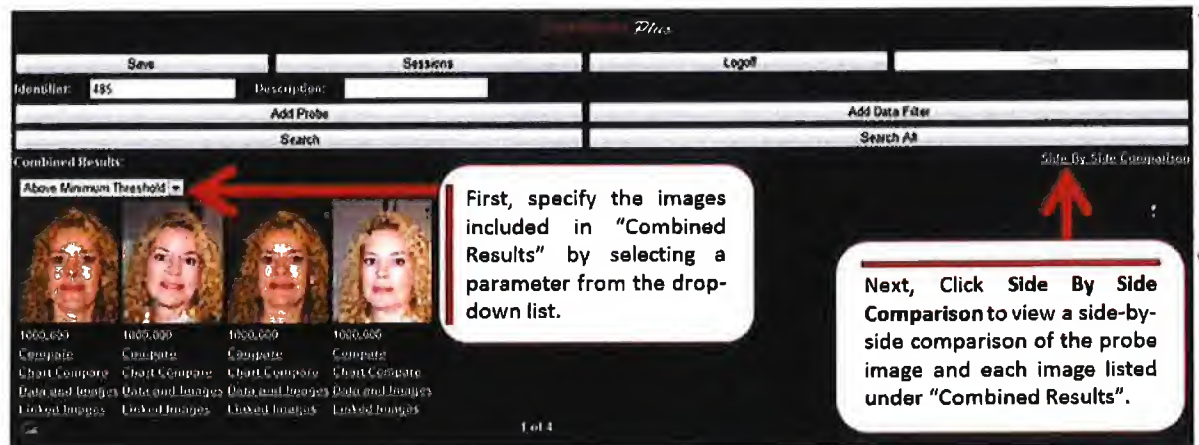
After you click **Side By Side Comparison**, which is located in the upper right corner, you will be able to view a side-by-side comparison of the selected probe image and each "Combined Results" image. You may mark result image(s) for review.

Click to print a report, which will include this probe and result image.

Click to mark for review. This image will then be included in the Combined Results – "Marked for Review" list.
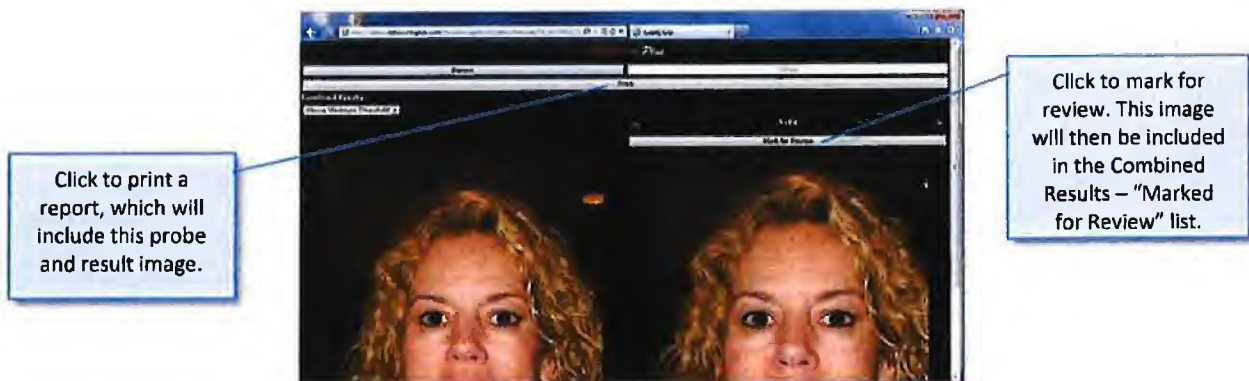
Click the right arrow to view the next "combined result" image beside the probe image.

Printing Side-by-Side Comparisons

You may print a report that displays the side-by-side comparison of the probe image and the result image. While viewing the side by side comparison, click the **Print** button.

Compare
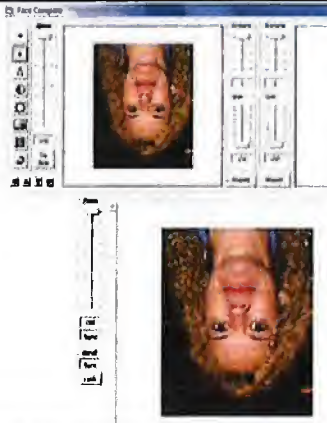
FACE Plus allows you to compare the probe image to one of the search result images. Select the desired probe image to compare (designated by a blue box), then click **Compare** under the search result image that you wish to compare to the probe image. A screen similar to the following will be displayed.
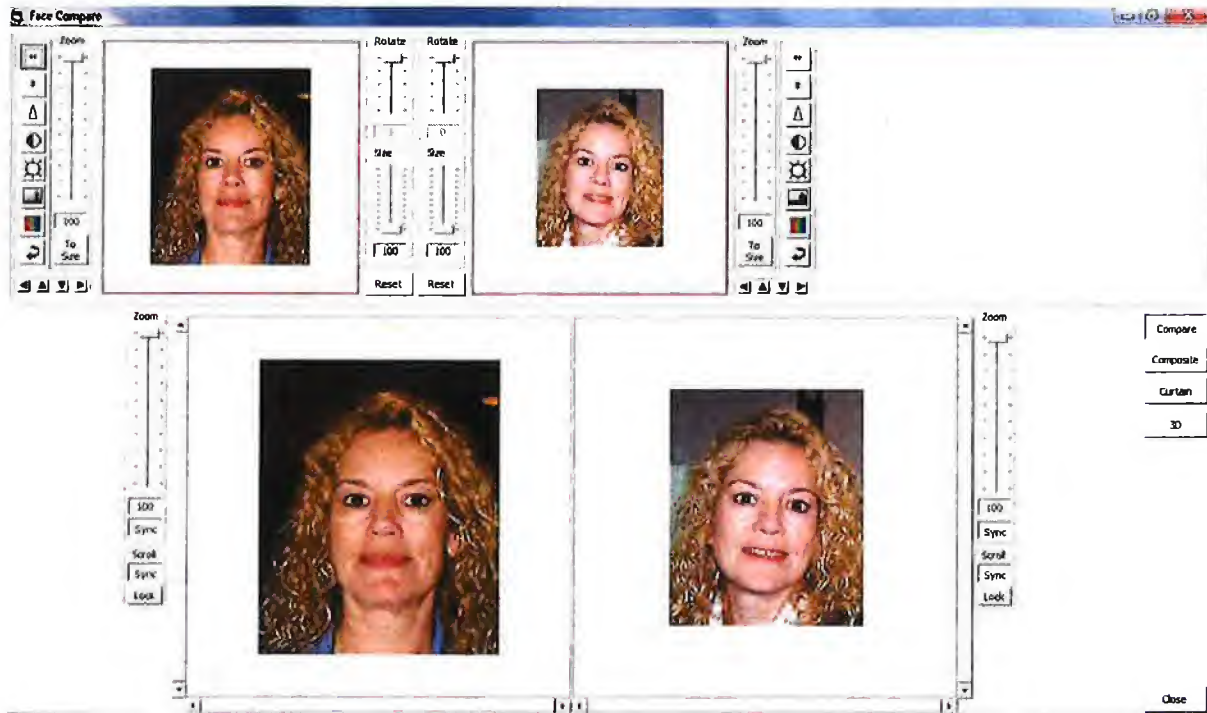
Top Panel Options

Several options are available at the top of the Face Compare screen. Unless otherwise noted, all of the actions available in the top portion of the screen will affect the larger corresponding image at the bottom of the screen.

Face Compare Screen – Top Panel Options

Original Image

	Reverse Image: This will reverse the image, flip the image horizontally. Note that reversing the image also reversed the image's display at the bottom of the screen.
	Flip Image: This will Flip the image vertically/turn it upside down. Note that flipping the image also turned the image's display upside down at the bottom of the screen.
	Sharpen Image: This allows you to sharpen the image. Sharpening seems to bring out image detail that wasn't there before by emphasizing the edges of an image. It increases the contrast between each pixel and its neighbors. You will be prompted to enter a sharpening value. Move the slider on the bar to the left or right or type in a percentage to sharpen the image by. Select **OK** to apply to adjust the image. For more information, please see *Sharpening Images* on page 52.
	Contrast: This allows you to adjust the contrast of the image. Contrast is the difference in brightness between light and dark areas in an image. You will be prompted to enter a

	Face Compare Screen – Top Panel Options
	contrast setting. Move the slider on the bar to the left or right or type in a percentage. Positive values increase the contrast of the image; negative values decrease the contrast. Select **OK** to adjust the image. For more information, please see *Adjusting Image Contrast* on page 53.
☼	**Brightness:** This allows you to adjust the brightness of the image. Brightness adjusts how light or dark and image appears. You will be prompted to enter a brightness setting. Move the slider on the bar to the left or right or type in a percentage. Positive values will lighten the image; negative values will darken the image. Select **OK** to adjust the image. For more information, please see *Adjusting Image Brightness* on page 53.
▣	**Saturation:** This allows you to adjust the saturation of the image. Saturation is the "purity" of the color. Fully saturated colors are very rich and bright. Less saturated colors are more gray. You will be prompted to enter a saturation value. Move the slider on the bar to the left or right or type in a percentage to change the saturation of the image. Click **OK** to apply the adjustment. For more information, please see *Adjusting the Saturation of an Image* on page 53 .
■	**Hue:** This allows you to adjust the hue, or color, of the image. You will be prompted to enter a hue angle. Depending on what number you enter, the color will be adjusted across the hue circle by that many degrees. Click **OK** to apply the adjustment. For more information, please see *Adjusting the Hue of an Image* on page 54.
↲	**Reset Image:** This button will reset the image to its original size and rotation.
Zoom 100	**Zoom:** These sliders allow you to zoom in or out on the image. This zooming affects only the image at top of the screen, not the image preview below. The percentage that you are zoomed in will be displayed in the box below the slider. You can also type in the percentage that you want to zoom in the box.
To Size	**To Size**: This button displays the image so that it fits in the preview window. Essentially this acts as a reset button if you have zoomed in on the image.

Face Compare Screen – Top Panel Options		
Rotate	**Rotate**: These sliders allow you to rotate the image. The degree that you have rotated the image will be displayed in the box below the slider. You can also enter the degree that you would like to rotate the image in the box. In this example, the result image was rotated 355 degrees to correct the slight tilt of the head, so that it more resembles the angle of the probe image.	
Size	**Size**: The "Size" slider will adjust the size of the red box around the image. For example, if you move the slider to 50 (or type 50 in the box below the slider) the red box will be reduced to outline 50% of the image as shown in this example. The preview image at the bottom of the screen will display the portion of the image in the red box. You may drag the box to change the view or use the arrow buttons to make more precise box movements.	

Bottom Panel Options

The bottom of the screen provides several tools that you can use to further compare the images. They include:

- Compare
- Composite
- Curtain
- 3D

The following sections describe these tools in more detail.

Compare

When the **Compare** button is selected, the images will be displayed side-by-side and you may compare the images by zooming and scrolling them.

Compare: Zoom

These sliders allow you to zoom in and out of the image. You can also enter the percentage that you would like to zoom in the box underneath the zoom slider. Click **Sync** to zoom the images simultaneously.

Note in the top screen, **Sync** was not clicked (pressed) before zooming to 217%, so only the left image was zoomed.

In the second screen, **Sync** was clicked (pressed) before zooming, so both images were zoomed simultaneously to 211%.

Scrolling

You may move the image around by clicking on the image and holding down the left mouse button while you move the mouse. The two Scroll buttons, **Sync** and **Lock** affect how the images move in relation to one another. When **Sync** is pressed, the images will be brought in line with each other and moved simultaneously. When neither button is pressed, you may move each image individually. When **Lock** is pressed, the images will be locked at their current positions and you can then scroll them simultaneously.

Composite

When **Composite** is selected, the images will be overlaid on each other. You may zoom in on the composite image by using the zoom slider bar. You may adjust the opacity of the images by using the **Opacity** slider bar on the right.

Curtain

When Curtain is selected, the left portion of the probe image and the right portion of the result image will be displayed. You may adjust how much of each image is shown by changing the "Curtain" slider located to the right of the image. Increasing the curtain number will display more of the left image.

Curtain set to 43.

Curtain set to 65.
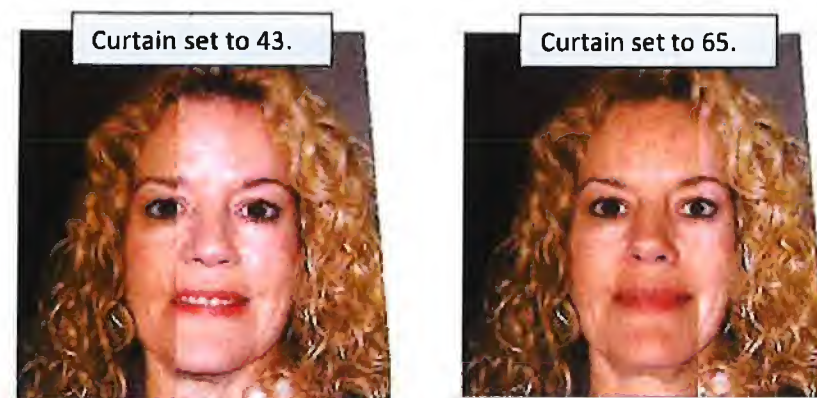
3D

The **3D** option allows you to generate a 3D model, which is comprised of both the probe image and the result image. When you click the 3D button, you will be prompted to select the view that best matches the probe image's pose.

Select the graphic that best matches the pose of the probe image.
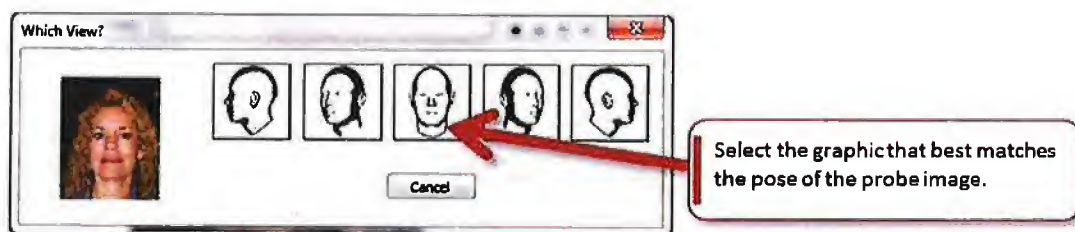
Click the graphic that best matches the pose of the probe image. You will then be prompted to select the view that best matches the result image's pose.

Select the graphic that best matches the pose of the result image.
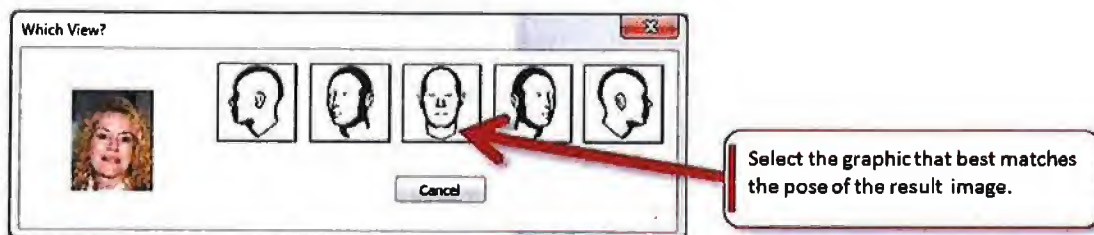
Click the graphic that best matches the pose of the result image. Both images will be displayed as shown on the following screen.
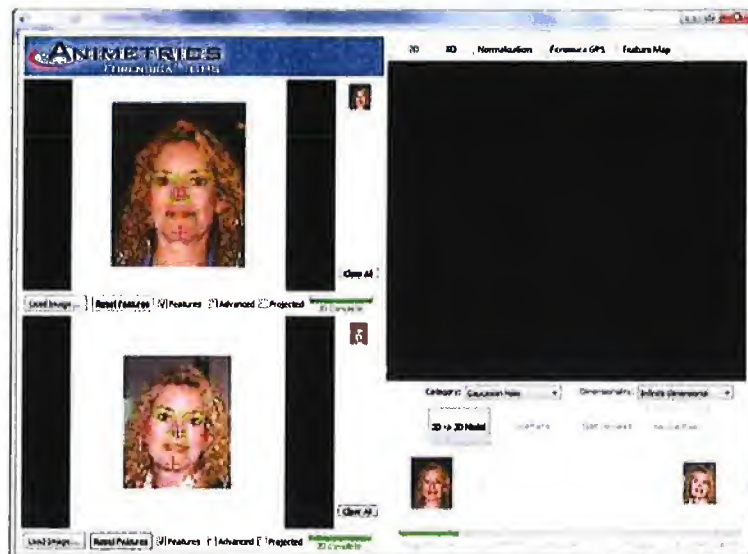
The accuracy of the 3D models generated is dependent upon the accuracy of the 2D feature points that overlay the original images. The features points are displayed on the image as red, green, and gray crosshairs. Verify that the red cross-hairs are in the correct place (eyes, chin and ear). The green and gray crosshairs may be moved if you wish to fine-tune the image. If you wish to move the feature points, refer to the following section: "*Adjusting Features*" on page 30; otherwise, proceed to "*Generating the 3D Model*" on page 31.

Adjusting Features

To move the feature points (crosshairs), first click the **Feature Map** tab.

Click the **Feature Map** tab to display a model with the correct feature point placement. When you click one of the crosshairs on the probe image, the crosshair on the Feature Map model will be highlighted in green to show you the proper placement.

The Feature Map displays the proper anatomical locations for each point. You may refer to it while adjusting the location of the selected crosshair. When you click one of the crosshairs on the probe image, the crosshair on the Feature Map model will be highlighted in green to show you the proper placement. The green and gray crosshairs may be moved if you wish to fine-tune the image. To reset the feature points to their original locations, click **Reset Features** below the original image.

Primary (Red) Points
Click and drag any of red feature points to their proper location. When the mouse is released, the green and gray "secondary" features are recalculated in real time based on the "primary" red features. This method of feature point adjustment will be sufficient to generate an accurate 3D model in most cases.

Feature Fine Tuning
The green and gray secondary features can also be moved if desired. To enable the secondary features, check the **Advanced** checkbox. The secondary features may now be adjusted by clicking and dragging with the mouse. The red primary features may also be moved, but if you adjust them when the "**Advanced**" box is checked, they system will not automatically recalculate the green and gray feature points. The green features indicate the subset that have either been detected or manually adjusted by the user. The blue/gray set is projected from the generated 3D model. To view the entire set of 3D projected features, check the **Projected** checkbox.

Resetting Features
To reset the feature points on an image to the original detected locations, click the **Reset Features** button below the image viewport.

Hiding/Showing Features
To toggle hiding/showing of the feature points on an image, click on the **Features** checkbox below the image viewport.

When you have finished adjusting the feature points, click the **3D** tab. Proceed to *"Generating the 3D Model"*.

Generating the 3D Model
Once the feature points have been adjusted (if necessary), it is time to generate the 3D model representing each subject.
- **Category:** Select the category from the drop-down list that best represents the subject in the photograph.
- **Dimensionality:** This parameter affects the variability and statistics used in generating the 3D geometries. Choose "One Dimensional" for a smooth, generic geometry, "Infinite Dimensional" for a more variable geometric structure. "Hundred Dimensional" is a compromise between the generic and specific choices. Note: all dimensionality choices may not be available for the selected metadata category.
- **2D ->3D Model:** Once the metadata category and dimensionality selections have been chosen, click on the **2D -> 3D** button to proceed with the 3D geometry generation. The progress bar below the Primary View thumbnails shows the status of the 3D generation process. A 3D model comprised of both images will be generated.

The 3D model is comprised of both the probe and result images. You may use the slider bar to adjust the view to show more of the probe or result image.

Rotating and Translating the 3D Model
You may rotate and translate the 3D model with your mouse. Click the left mouse button, hold and drag to rotate the model. Click and drag the right button to translate the model. Click and drag with the middle button to move the model towards or away from you (zooming in and out).

Left mouse button rotates the model.	Right mouse button translates the model.	Middle mouse button moving up zooms in on the model.	Middle mouse button moving down zooms out on the model.
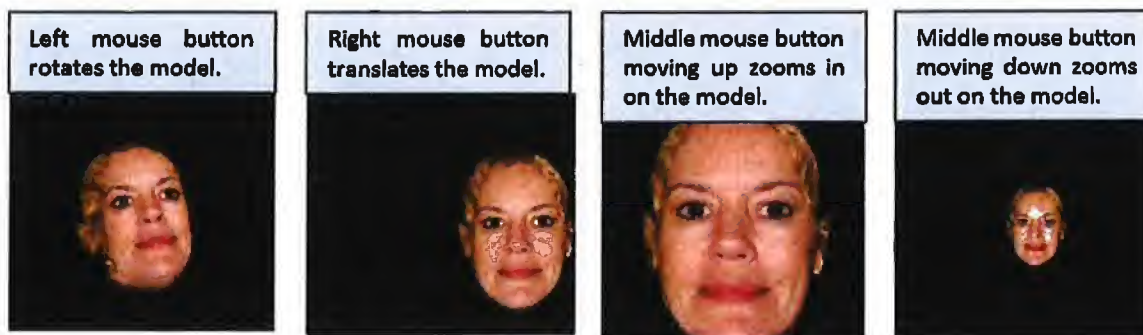
Creating a Splitview of the 3D Model

You may also create a splitview of the 3D model. Check the **Split Viewport** box.

The red line may be rotated. Place your mouse pointer near the top or bottom portion of the line. When the pointer changes to a circular arrow, hold down the left mouse button and drag.

Click **Close** when you have finished comparing the 3D models. You will be returned to the Compare screen.

Normalizing the 3D Model – Poses and Lighting

The **Normalization** tab contains tools for visualizing the 3D geometries of both subjects simultaneously as well as normalizing the lighting in the primary photographs. The Normalization tools are not active until a model has been generated with the **[2D -> 3D Model]** button. Click the **Normalization** tab.
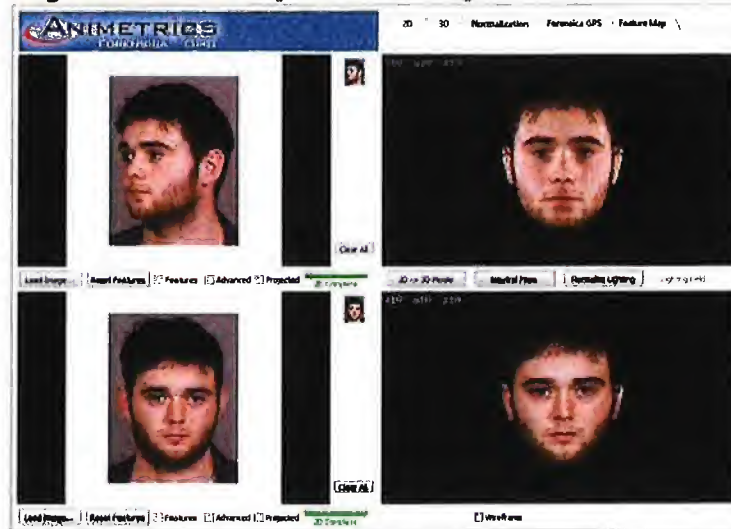
From this screen, you may change the pose of the 3D model and normalize the lighting of the images.

Choosing a reference image/pose

Clicking on the image thumbnails directly to the right of the subject viewports will change the reference pose to match that of the selected image. Both 3D models will be rotated to match the selected pose. In the following example, the top thumbnail was clicked.
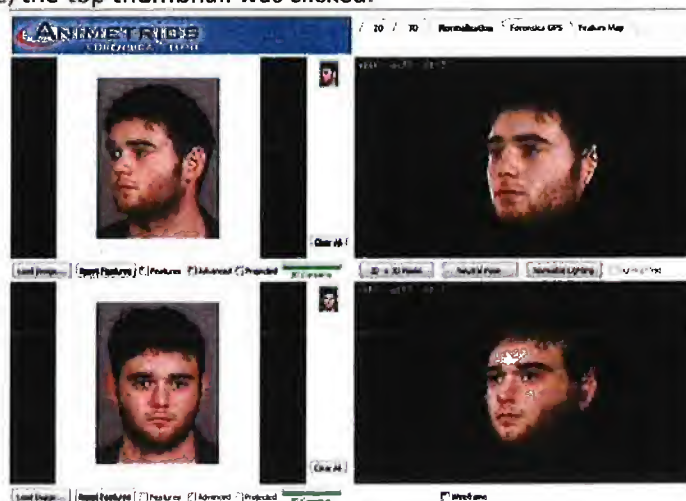
Notice that the pose of the bottom 3D model was changed to match the pose of the thumbnail that you clicked. Clicking **Neutral Pose** will return both 3D models to a neutral pose.

Normalize Lighting

Clicking on the [Normalize Lighting] button will compute the lighting field on each primary view and attempt to normalize the lighting effects on the 3D texture. Once computed, the button can now be used to toggle between the normalized and original lighted textures.

Lighting Field

After the lighting field is computed using the [Normalize Lighting] button, the [Lighting Field] checkbox can be used to toggle a visualization of the lighting field in the primary photograph for each subject.

Chart Compare

Chart Compare allows you to make annotations and measurements on the probe image and the result image. First, verify that the correct probe image you wish to compare is selected. (The selected probe image will be surrounded by a blue border.)
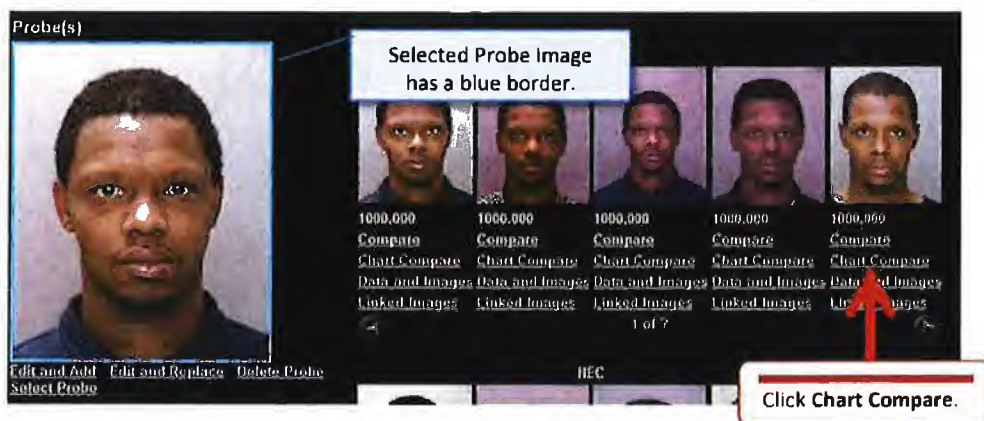
Click **Chart Compare** beneath the image you wish to compare. The Facial Markup screen will be displayed.

Set Eye Locations

First set the eye locations for both the probe and result images.

Set Eye Locations for Probe Image

Click **Set Eyes**. If you'd like to zoom on the image, click **Zoom**. You should draw a line between the pupils on the image. On the probe image, go to the left pupil, click and hold the left mouse button, and drag to the right pupil's location. Release the mouse button. The line you drew will be displayed.

Set Eye Locations for Result Image

Set the eye locations for the result image on the right side of the screen. Click **Set Eyes**. If you'd like to zoom on the image, click **Zoom**. Go to the left pupil, click and hold the left mouse button, and drag to the right pupil's location. Release the mouse button. The line you drew will be displayed.
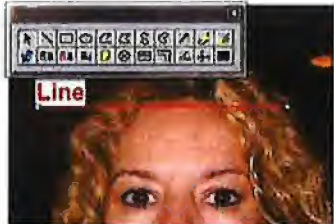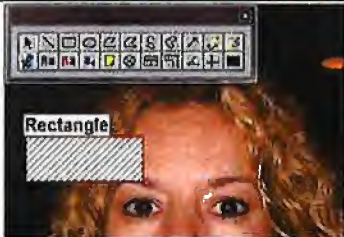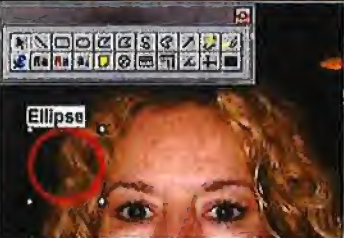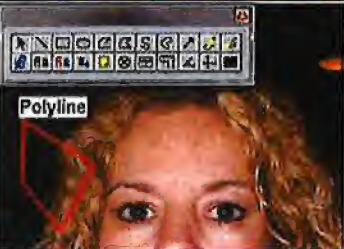
Adding Annotations
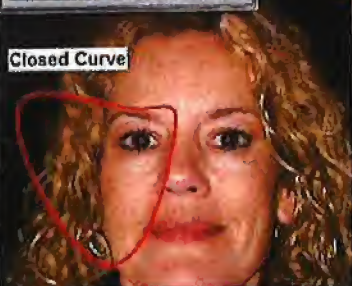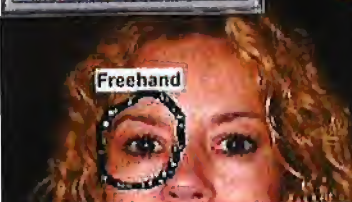
You may add annotations or make measurements to further compare the two images. Click **Annotations ON** beneath the image. The button will then display **"Annotations OFF"** and the Annotation Toolbar will be displayed. Several tools are available for adding annotations to the images.

Annotations Toolbar
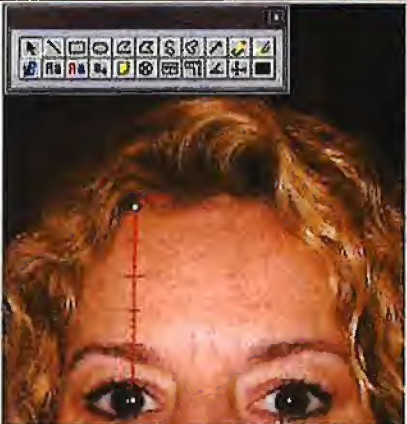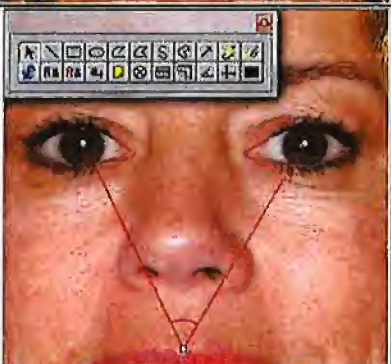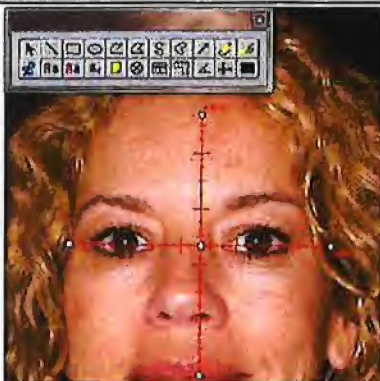
Annotation Toolbar

Annotation Toolbar	
	Select allows you to select drawn objects or selected areas on the image.
	Line allows you to draws a line. After the line is drawn, you may right-click the line and modify the properties of the line, including its color and width. You may also name the line. Available property options are Name, Line, ROP2, Fill, Foreground Color, Background Color, and Font.
	Rectangle allows you to draw a rectangle. After the rectangle is drawn, you may right-click the rectangle and modify the properties, including its color and width. You may also name it. Available property options are Name, Line, ROP2, Fill, Foreground Color, Background Color, and Font.
	Ellipse allows you to draw an ellipse. After the ellipse is drawn, you may right-click the ellipse and modify the properties, including its color and width. You may also name it. Available property options are Name, Line, ROP2, Fill, Foreground Color, Background Color, and Font.
	Polyline allows you to draw connecting lines. Click on the image to start the first line, and then click where you want to change direction. Do this until you have drawn the shape you need. Double click to see the completed drawing. Right click for polyline properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, and Nodes.

Annotation Toolbar		
![Polygon icon]	**Polygon** allows you to draw lines, and then closes the image by connecting the first and last points. Click on the image to start the first line, and then click where you want to change direction. Do this until you have drawn the shape you need. Double click to see the completed drawing. Right click for polygon properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, and Nodes.	
![Curve icon]	**Curve** allows you to draw a curve. Click on the image to start the first line, and then click where you want the curve to be. Move the mouse and click again to create another curve. Do this until you have drawn the shape you need. Double click to see the completed drawing. Right click for curve properties: Name, Line, RPO2, Foreground Color, Nodes, Fixed.	
![Closed Curve icon]	**Closed Curve** allows you to draw a closed curve. Click on the image to start the first line, and then click where you want the curve to be. Move the mouse and click again to create another curve. Do this until you have drawn the shape you need. Double click to see the completed drawing – the curve will automatically be closed for you. Right click for closed curve properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Nodes, Fixed.	
![Pointer icon]	**Pointer** allows you to draw an arrow. Right click for pointer properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, and Font.	
![Freehand icon]	**Freehand** allows you to draw a freehand shape. Right click the shape for freehand properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, and Nodes.	

	Annotation Toolbar	
🖊️	**Highlighter** allows you to highlight the selected area. Right click highlight properties: Name, Foreground Color, Background Color, and Font.	
📌	**Pushpin** allows you to add a note with a push pin graphic. Right click for pushpin properties: Name, Foreground Color, Background Color, Font, Bitmap, Text, and Secondary Bitmap.	
Aa	**Text** allows you to add text to the image. Click and hold down the mouse button to create the text box. Type the desired text.	
Aa	**Rich Text** allows you to add text to the image, and provides additional options for modifying the text, such as changing the font, size, and/or attributes of the text.	
🔳	**Text Pointer** allows you to add a note field that you can type text in and then extend a pointer line. Click on the image and hold the mouse button and drag to create the text box. Release the mouse button. Move the mouse to create the pointer line. Click the left mouse button to set the ending point of the pointer line. Right click the text box for text pointer properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, Text, and Fixed.	
▫️	**Note** allows you to add a note field that you can type text in. Click on the image and hold the mouse button and drag to create the note box. Type the desired text in the box. Right click for note properties: Name, Fill, Foreground Color, Background Color, Font and Text (this option lets you change the text that is shown in the note).	

Annotation Toolbar	
	Point allows you to draw a crosshair point. Right click for point properties: Name, Transparent, Transparent Color, Fill, Foreground Color, Background Color, Font, and Bitmap.
	Ruler allows you to draw a ruler with a measurement. Click and hold the mouse button and drag to create the ruler. Right click the ruler for properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, Ruler, and Fixed.
	Polyruler allows you to draw connecting ruler lines with a measurement. Click on the image to start the first line, and then click where you want to change direction. Do this until you have drawn the shape you need. Double click to see the completed ruler. Right click for properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, Ruler, Nodes, and Fixed.
	Protractor allows you to find the angle degree between two points. Click where you want the vortex to be and then move the mouse to the first location and click. Then move the mouse to the second location and click again to create the angle. Right click for protractor properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, Ruler, Protractor, and Fixed.

Annotation Toolbar		
	Crossproduct allows you to draw perpendicular rulers with measurements. Click and hold the mouse button and drag to create the rulers. Right click for properties: Name, Line, ROP2, Fill, Foreground Color, Background Color, Font, Ruler, and Fixed.	
	Redact allows you to draw a rectangle that is filled with a color. Right click for Redact properties: Name and Background Color.	

The "Text Pointer" and "Point" tools will be described in more detail in the following section because they are used to assign points on the image(s), which are then used with the assigned points measuring tool.

Making Measurements

Before making a measurement, be sure that the eye locations have been set. See Set Eye Locations for Probe Image on page 37 for more information. You may either measure between two assigned points on the image or measure the length of a line you draw on the image (no assigned points).

Assigned Point Measurements

In order to measure between assigned points on an image, you must first designate the point(s). You will need two or more points for measurements.

Assigning Points

Two tools allow you to assign points on the image:

- Text Pointer

- Point

To access the annotations toolbar, first click **Annotations ON**. The toolbar will be displayed. Click to access the Text Pointer tool. Click near the point you'd like to reference, hold the left mouse button and drag to draw the text box. When you release the left mouse button, drag the mouse to the location of the point on the image that you wish to reference. When you reach the desired location, click the left mouse button. A line from the bottom right corner of the text box will be drawn. Type the text you wish to use to describe this point and press **[Enter]**.

In the previous example, we typed "Scar 1" to designate the right end mark of the scar. Set at least one other point on the probe image. You may use the Text Pointer tool again or the Point tool. In the following example, we'll use the Point tool. Make sure Annotations are active. Click to access the Point tool. Click on the point you'd like to reference.

Assign similar points on the results image.

Measuring the Distance Between the Points

You may then measure the distance between the points. Below the "Zoom", "Set Eyes" and "Annotations" buttons are two fields that have a down-arrow button signifying a drop-down list. Click the drop-down arrow in the top field and select the starting point of the measurement (all assigned points will be listed).
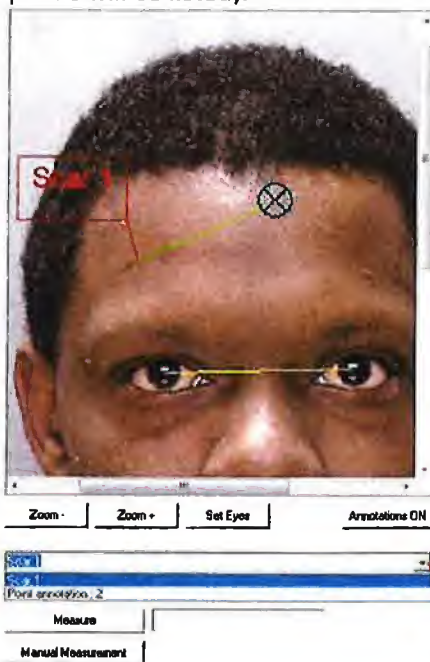
Click the down arrow to display assigned points on the image. Select the first point from the drop-down list.

Click the bottom drop-down arrow and select the ending point of the measurement. Click the **Measure** button. The length and angle between the two points will be displayed.

Click the down arrow to select the second point from the drop-down list.

Then click **Measure** – the length and angle between the two points will be displayed.
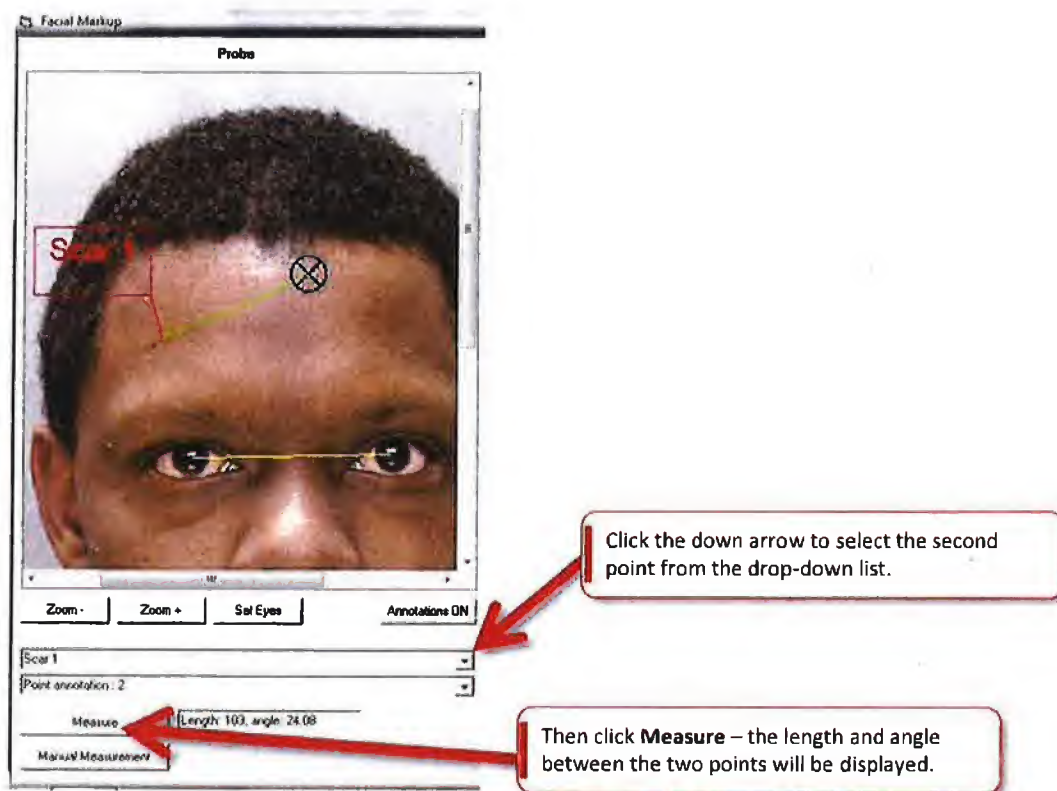
Perform the same steps on the results image to measure between the two points.

The measurements are not saved, so you may want to create a text box to make notes of the measurements, as shown in the following screen.
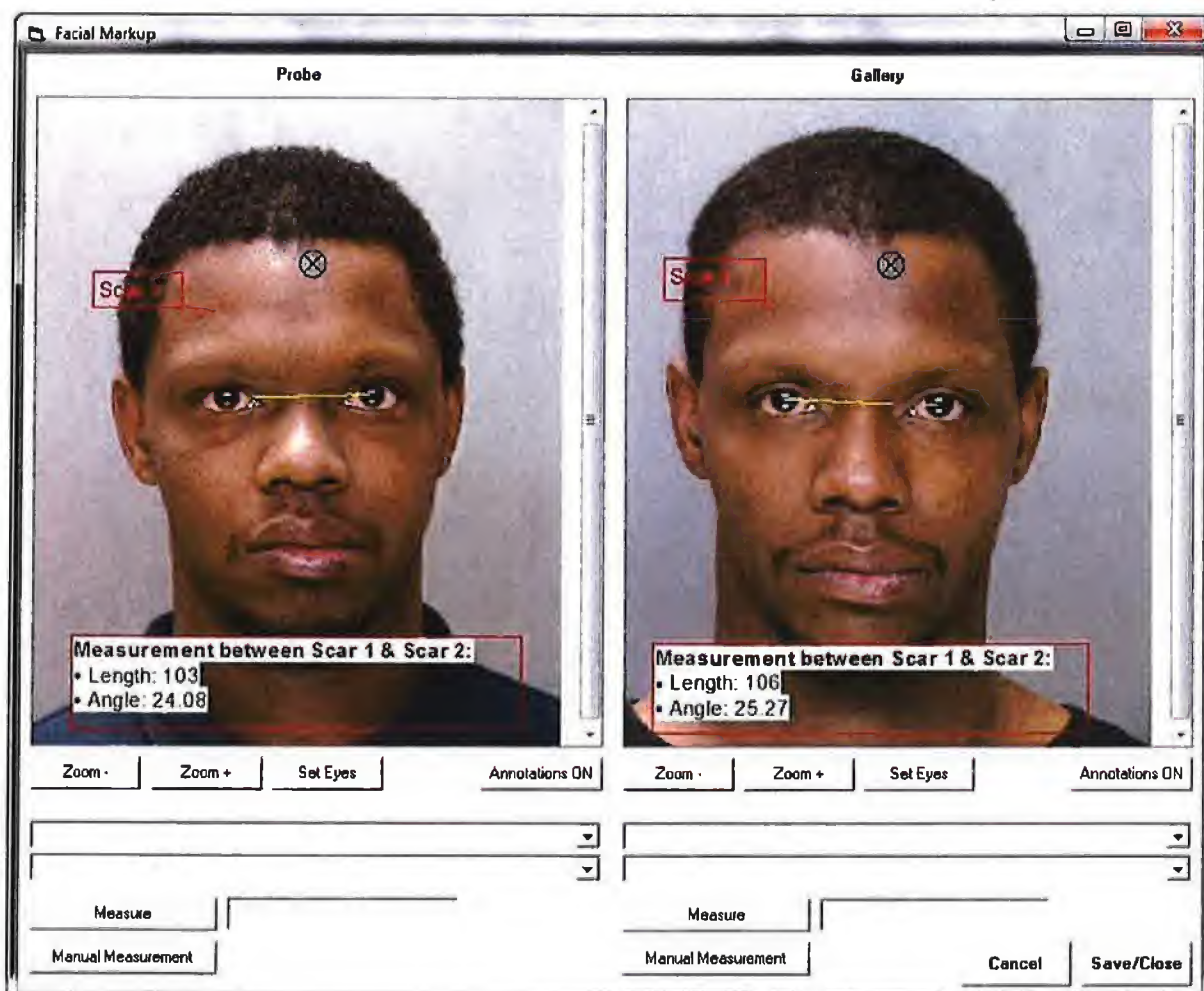
Manual Measurements/No Assigned Points

You may still make measurements even if you haven't assigned particular points, by using the **Manual Measurement** tool. Click the **Manual Measurement** button, then click on the image at the starting point and hold down the mouse button to drag to the ending point. A green line will appear on the image and the measurement will appear in the box to the right of the **Measure** button.
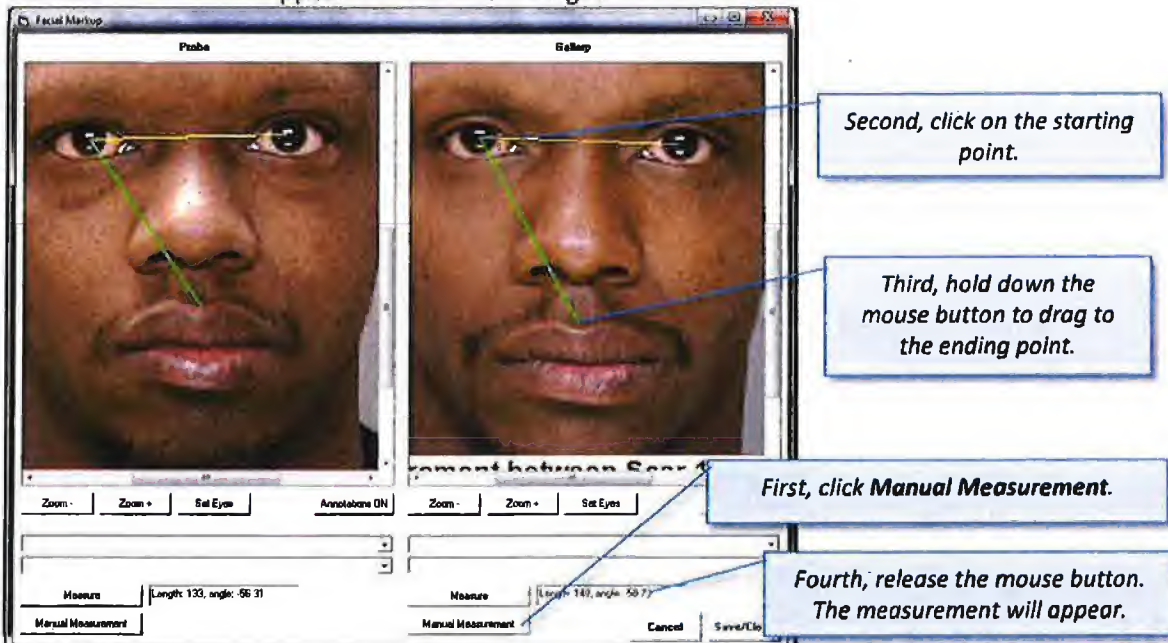
Data and Images

You may view data and images that are associated to an image by clicking **Data and Images** below the appropriate image.

A screen similar to the following will be displayed. Additional information about the individual will be included on tabs. In addition, you may view additional images for the record (if available).

Linked Images

Click **Linked Images**.

Appendix A: Working With Images

Image Manipulate Tools

Cropping Images

Select the **Crop Tool** (![crop icon]). Click on the image where you would like to start the crop box and then drag it to the desired size. The area to be deleted from the image will be shown as darker than the area that will be kept. This is shown in the following image.

If you would like to change the crop area, then click on the darker area of the image and redraw the crop box. If you are satisfied with the area to be cropped, then select **Apply Crop**. The portion of the image that was not shaded will be displayed and the rest of the image will be discarded.

Sharpening Images

Sharpening seems to bring out image detail that wasn't there before by emphasizing the edges of an image. It increases the contrast between each pixel and its neighbors. You will be prompted to enter a sharpening value. Move the slider on the bar to the left or right or type in a percentage to sharpen the image by. Select **OK** to apply to adjust the image.

Adjusting Image Contrast

Contrast is the difference in brightness between light and dark areas in an image. You will be prompted to enter a contrast setting. Move the slider on the bar to the left or right or type in a percentage. Positive values increase the contrast of the image; negative values decrease the contrast. Select **OK** to adjust the image.

Adjusting Image Brightness

Brightness adjusts how light or dark and image appears. You will be prompted to enter a brightness setting. Move the slider on the bar to the left or right or type in a percentage. Positive values will lighten the image; negative values will darken the image. Select **OK** to adjust the image.

To change the brightness of an image, click the **Brightness** (☼) button from the toolbar menu. You will be prompted to select a percentage.
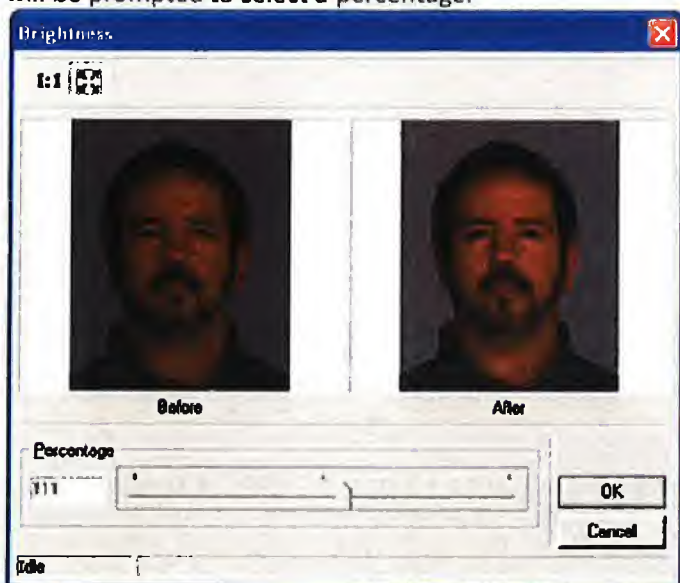
Choose a positive number to brighten the image. The higher the number, the brighter the image will be. A negative number will darken the image if it is too bright. Select **OK** to view the changes. If you are not satisfied with the changes, then select **Edit** from the top toolbar and **Undo** and try a different number to change the brightness.

The image below has been brightened and the contrast has been increased to maintain the correct color balance. Once you are satisfied with you changes click on **Save/Close** to return to the lineup screen. The edited image will be placed into the lineup.

> *If your image is brightened correctly, but looks like it has lost vivid color, then you may have to increase the contrast as well. This is located under Image of the top toolbar or via the side toolbar using the contrast button (◑).*

Adjusting the Saturation of an Image

Saturation is the "purity" of the color. Fully saturated colors are very rich and bright. Less saturated colors are more gray. You will be prompted to enter a saturation value. Move the slider on the bar to the left or right or type in a percentage to change the saturation of the image. Click **OK** to apply the adjustment.

Adjusting the Hue of an Image

This allows you to adjust the hue, or color, of the image. You will be prompted to enter a hue angle. Depending on what number you enter, the color will be adjusted across the hue circle by that many degrees. Click **OK** to apply the adjustment.

Rotating Images

This option will open the Rotate Window. The original image before the change is shown on the left and labeled as 'Before'. The changes that will be made to the image can be previewed in the 'After' image on the right. You can rotate your image to any degree desired by using the slider in the middle of the image or by typing the number of degrees that you would like to rotate the image by in the box next to the slider.

Below the rotation angle slider there are additional options available.

- **Interpolation Type**: the options from the drop down menu here are: Normal, Resample, and Bicubic.
- **Background**: This allows you to change the background color for the empty space left after you rotate the image.
- **Resize**: If you check this box, then the image will be resized to fit the entire image in the window.

When you are done making changes select **OK** to save changes and return to the Image Manipulate window or select **Cancel** to discard changes and return to the Image Manipulate window.

Adding Noise to Images

When you select to **Add Noise** from the Image Menu, the Add Noise window will be displayed. Noise will add flecks of random color in the image which will give an appearance of an image taken in low light or appear similar to film grain seen with older photos. Generally, this function will not be used. However, if you would like to make a digital image match an older photo, or a photo with a 'grainy' appearance, such as from a newspaper, then this function may be useful.

The original image prior to the Noise changes is shown on the left side and labeled as 'Before'. Any changes made can be previewed in the 'After' image shown on the right.

You can use the Noise Level slider to add the amount of noise that you desire or type level in the box to the left of the slider.

You can also select the color channel to which you would like the noise to be added. This is selected from the **Channel** drop down menu at the bottom left of the screen. Your options here are **Master, Red, Green,** and **Blue**. When you are done making your changes select **OK** to save your changes and return to the Image Manipulate window or select **Cancel** to discard changes and return to the Image Manipulate window.

Appendix B: Forensica

Loading Images

To load an image into Forensica GPS, click on the [Load Image...] button below the top or bottom viewport. You can load up to 5 images of the same person in each viewport.

Supported file formats
Supported image files include *.jpg, *.png, *.gif, and *.bmp

Pose types
After selecting an image file from disk, the [Which View] dialog prompts you for the pose. Click on the icon that best matches the input photograph.

Image thumbnails
After loading one or more images, the thumbnails shown directly to the right of the viewports show the active images for that subject. You can click on the thumbnails to enlarge the chosen image in the subject's viewport.

Primary view
In order to proceed with 3D model generation, a frontal "primary view" must be loaded for each subject. If none is specifically selected, the first frontal image to be loaded for that subject is chosen by default. The primary view forms the basis of the texture map on the 3D model, so it is important to choose the best quality frontal photograph available. You can change the primary view by right-clicking on the thumbnail and selecting [Set As Primary View]. The primary view for each subject is shown on either side of the slider control in the lower right.

Removing images
To remove an individual image from a subject's dossier, right-click on the thumbnail to remove and choose [Remove Image]. To remove all images from a subject, click the [Clear All] button next to the subject's viewport.

Adjusting Features

The accuracy of the 3D models generated by Forensica GPS is dependent on the accuracy of the 2D feature points that overlay ecah photograph. Forensica GPS includes automatic feature-finding algorithms that are invoked each time a new image is loaded. The feature points are displayed on the image as a series of red, green, and gray crosshairs. These feature points may be adjusted by the user as descibed in the following sections. Refer to the Feature Map for the proper anatomical locations for each point. As a feature point is moved, the Feature Map is displayed in the right side viewport illustrating the correct location of the selected feature.

Semi-automatic adjustment
The primary method of feature point adjustment is through semi-automatic refinement. Click and drag any of red feature points to their proper location. When the mouse is released, the green and gray "secondary" features are recalculated in real time based on the "primary" red features. This method of feature point adjustment will be sufficient to generate an accurate 3D model in most cases.

Feature fine tuning
The green and gray secondary features can also be moved if desired. To enable the secondary features, check the [Advanced Features] checkbox. The secondary features may now be adjusted by clicking and dragging with the mouse. The red primary features may also be moved, but the semi-automatic refinement is disabled when the [Advanced Features] box is checked. The green features indicate the subset that have either been detected or manually adjusted by the user. The blue/gray set are projected from the generated 3D model. To view the entire set of 3D projected features, check the [Projected] checkbox.

Resetting features
To reset the feature points on an image to the original detected locations, press the [Reset Features] below the image viewport.

Hiding/Showing features
To toggle hiding/showing of the feature points on an image, click on the [Features] checkbox below the image viewport.

Generating a Model

Once all of the images are loaded for each subject and the feature points have been adjusted (if necessary), it is time to generate the 3D geometry representing each subject. In order to generate 3D models, at least one frontal photograph for each subject must be loaded (top and bottom viewports).

Metadata category
Choose the category from the drop-down list that best represents the subject in the photographs.

Dimensionality
This parameter affects the variability and statistics used in generating the 3D geometries. Choose "One Dimensional" for a smooth, generic geometry, "Infinite Dimensional" for a more variable geometric structure. "Hundred Dimensional" is a compromise between the generic and specific choices. Note, all dimensionality choices may not be available for the selected metadata category.

2D -> 3D
Once the metadata category and dimensionality selections have been chosen, click on the [2D -> 3D] button to proceed with the 3D geometry generation. The progress bar below the Primary View thumbnails shows the status of the 3D generation process.

Manipulating the 3D Model

The 3D model may be manipulated inside the 3D viewport using the mouse controls. To rotate the model, click and drag the left mouse button within the viewport. To translate the model, click and drag the right mouse button within the viewport. To zoom the view, click and drag the middle mouse button.

Splitting the 3D viewport
To split the 3D viewport, rendering the 3D model from one subject on one side of the divider and the other subject on the other side, click the [Split Viewport] checkbox. This is a useful tool to help visually determine if the two subjects are the same person. The splitter may be manipulated also with the mouse. As the mouse is moved closer to the splitter, the cursor will change to indicate the active splitter

control. If the mouse is placed far away from the center of rotation (indicated by a white dot), the splitter can be rotated by clicking and dragging the left mouse button. If the mouse is placed close to the center of rotation (indicated by a white dot), the splitter can be translated by clicking and dragging the left mouse button. The center of rotation (white dot) can be repositioned while translating by holding the shift key. NOTE: the 3D model can also be manipulated while the viewport is split.

Saving a screenshot
Click the [Save Snapshot] button to export the 3D rendering as an image file. Supported file formats for snapshots are *.png and *.jpg.

2D Comparison

The [2D] tab contains tools for comparing the two subjects by aligning and transforming their photographs in register with one another. Transparency blending is used as a visual aid to identify corresponding or mismatched facial features, tattoos, or scars. As with the 3D geometry, the accuracy of the image registration is affected by the quality of the feature points placed on the images prior to model generation. The 2D Comparison tools are not active until a model has been generated with the [2D -> 3D] button.

Choosing a reference image/pose
Clicking on the image thumbnails directly to the right of the subject viewports will change the reference pose to match that of the selected image. It also selects the representative photo from that subject to use in 2D comparison. It is best to select matching poses for the top and bottom subjects when possible. (e.g., compare a frontal to a frontal, or a left profile to a left profile)

Using the transition slider
The slider control situated between the two primary view thumbnails at the lower-right is used to interactively blend the transparency between the two subjects. The primary view thumbnails can also be clicked to instantly move the slider to the two extremes.

3D Comparison

The [3D] tab contains tools for comparing the two subjects by simultaneously visualizing the correlation or mismatch in their 3D face structure and texture. The 3D Comparison tools are not active until a model has been generated with the [2D -> 3D] button.

Choosing a reference image/pose
Clicking on the image thumbnails directly to the right of the subject viewports will change the reference pose to match that of the selected image. It also will set the 3D geometry and texture of the 3D model to match that of the selected subject.

Manipulating the 3D model
The 3D Model can be rotated and translated by using the mouse. Click and drag with the left button to rotate the model. Click and drag with the right button to translate the model. Click and drag with the middle button to move the model towards or away from the camera.

Neutral pose
Clicking on the [Neutral Pose] button will reset the model to a front pose, centered in the viewport.

Wireframe
Clicking on the [Wireframe] check box will toggle between displaying the 3D wireframe mesh. The wireframe mesh is shown both in the 3D viewport, and projected over the images in the left viewports.

Using the transition slider
The slider control situated between the two primary view thumbnails at the lower-right is used to interactively blend the geometry and texture simultaneously between the two subjects. The primary view thumbnails can also be clicked to instantly move the slider to the two extremes.

Normalization

The [Normalization] tab contains tools for visualizing the 3D geometries of both subjects simultaneously as well as normalizing the lighting in the primary photographs. The Normalization tools are not active until a model has been generated with the [2D -> 3D] button.

Choosing a reference image/pose
Clicking on the image thumbnails directly to the right of the subject viewports will change the reference pose to match that of the selected image. Both 3D models will be rotated to match the selected pose.

Normalize lighting
Clicking on the [Normalize Lighting] button will compute the lighting field on each primary view and attempt to normalize the lighting effects on the 3D texture. Once computed, the button can now be used to toggle between the normalized and original lighted textures.

Lighting field
After the lighting field is computed using the [Normalize Lighting] button, the [Lighting Field] checkbox can be used to toggle a visualization of the lighting field in the primary photograph for each subject.

Global Positioning System

The [GPS] tab contains tools for checking the correlation or mismatch of selected locations or distances between the two subjects. The GPS tools are not active until a model has been generated with the [2D -> 3D] button.

GPS Mode
The [GPS Mode] is enabled by selecting its checkbox, moving the mouse over the 3D model or photographs will simultaneously compute the corresponding locations in all viewports. The point in registration is displayed as a blue X in the image viewports and a small blue sphere in the surface viewport. This tool can be useful in comparing the locations of tattoos or scars, for example.

Measuring tool
To measure and compare distances on the face, select the [Measure] checkbox. The cursor now turns into a tape measure. To measure a distance on the face, click on the 3D model or one of the images to place the first point in the segment. Release the mouse button and drag the cursor to a second endpoint. Click the mouse a second time to lock in the measurement. The distance in millimeters

between the two endpoints is displayed in the field below the [Measure] checkbox. The displayed measurements are calibrated based on an assumed 63mm pupillary distance. The distance is defined as the length of the direct line between the two locations in 3D, not around the contour of the face. Once a measurement is locked in place, the slider can be used to interpolate the 3D geometry and the distance may change. This can be a useful tool to help identify a correlation or mimatch between the two subjects.

Feature Map

The [Feature Map] tab displays the proper locations of the facial feature points on a generic face model. This tab is automatically displayed when moving a feature point on one of the photographs. The selected feature is highlighted in green and the name is displayed in the upper-left corner of the map.

Choosing a reference image/pose
Each pose type has its own associated feature map. By clicking on the image thumbnails to the right of the subject viewports, the pose of the feature map will change to match the selected image.

Selecting a feature
A feature can be selected using the left mouse button. The corresponding feature will be highlighted in green in all of the photos.

CHICAGO POLICE DEPARTMENT
Bureau of Detectives
FACIAL RECOGNITION

Bureau of Detectives
Facial Recognition

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Department Notice D13-11

Objectives

- Develop Awareness of Facial Recognition Technology.
- Identify a Probe Image and Gallery Image.
- Modify the probe image for use in the Data Works Software.
- Learn to correct image poses through 3D imaging.
- Learn to Compare Probe and Gallery images.
- Learn to use the Data Works Software to develop leads.
- Understand that the technology is merely an Investigative Tool.

Terminology

- Probe Image: The selected image that will be compared to the Clear Mug Shot Database using Face Plus.
- Gallery Image: Images that are selected by the Face Plus software that have a similar Facial Template to the Probe Image and are available for review in the software based upon their selection.
- Possible Suspect: Individuals whose Gallery Image strongly resembles the probe image and have been selected for further investigation by the User.
- Facial Template: A template obtained by the software after an analysis of locations of features on the face, the measurements of those features and between those features and an analysis of the spatial relationship between those features.

Key Points

- This is an Investigative Tool that is easy and fun to use.
- Can develop leads where there was none but a picture.
- You do not need to be a technological wizard to use the software effectively.
- The Bureau of Detectives does not expect Detectives to spend hours modifying an image for usability.
- Take your probe image and try to use it, you might be surprised at the results.

Remember

- This is only an investigative tool akin to using the mug shot database and entering demographic information.
- Instead of demographics, the software uses an analysis of various features and points on the face, the measurements of those points and an analysis of the spatial relationship between those points.
- The software is not an identification in and of itself.
- A high numeric score of a gallery image is <u>NOT probable cause to arrest nor is the fact that a potential suspect strikingly resembles your probe image</u>.

Remember (Continued)

- Numeric Scores can change based upon Measurements, Resolution, Focus, Lighting, Angles, and Pixilation, etc.
- A higher numeric score does not necessarily include or exclude an individual as a possible suspect.
- Avoid using terms such as match, using the numeric values of gallery images in reports, and stating that the software identified the gallery image as the offender.
- Avoid using the software to confirm or exclude an individual as a possible offender.
- Do not let the software become exculpatory evidence.

Representative Likeness

- An image that when taken in the context of multiple images best represents what an offender looks like.
- Camera angles, pixilation, shadows, facial expressions, contrast, etc. can make the same individual in a photograph appear different by highlighting or diminishing multiple details in the facial area.

Burglary In Area Central
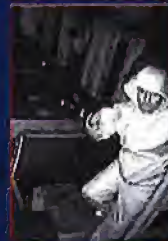
Representative Likeness

- If there are multiple images, the Detectives and Facial Recognition Team needs to evaluate all images but an image that is a Representative Likeness of the Offender is the most valuable and should be identified if possible.
- When importing multiple probe images, comparisons have to be made to the multiple Gallery Images that are returned from the Software.

Some People Look Alike
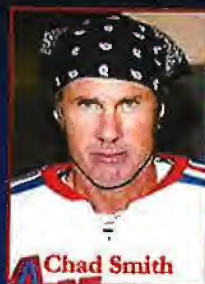
Chad Smith — Will Ferrell — Selena Gomez — Lucy Hale

Joseph Gordon Levitt — Heath Ledger — Ilham Anas — Barack Obama

These People Are Not Related

Our own CPD celebrity look alike.

John Slattery (Mad Men)

Capt. John Farrell (CPD Ret.)

The Beauty Shop Rapist

Description:
5'8"
▪28-32 years old
▪180 lbs.
▪Dark Complexion
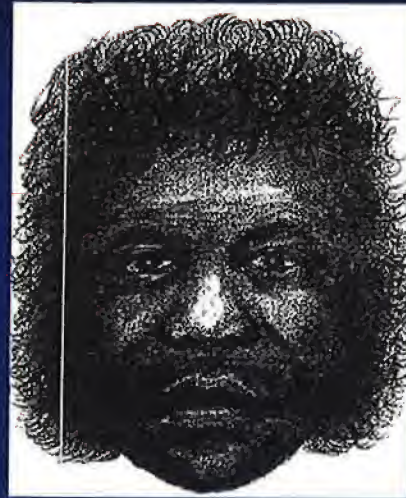
Eyewitness identification:

- Skerch brings in tip of John Willis
- Arrested
- No alibi
- 7 lineups: picked out by 11 eyewitnesses
- Convicted at trial based upon eyewitness testimony
- Sentenced to 100 years

Could not look closer to sketch

8 years later: DNA Reveals
The Real Rapist Dennis McGruder

Your Own Interpretations can be Wrong
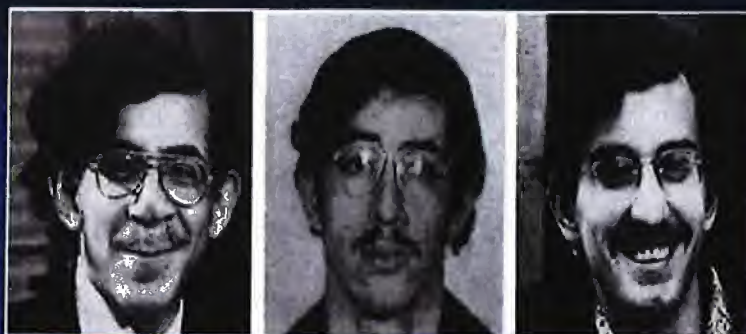
- Sketch of suspect brought in leads on these three men
- Men in left and right photos were identified in police lineups by witnesses to robberies and rapes committed by man in the middle.

Based on sketch, wrong man picked up on a Terry Stop

Facial Recognition Suitability

Data Works Facial Recognition

- Workstations are available for your use in:
  - Area North, Central, and South
  - Central Investigations Division
  - District 012

- Additional Workstations
  - Bureau of Detectives 4th Fl HQ
  - Bureau of Organized Crime
  - C.P.I.C.
  - Records Division

Facial Recognition Works

Facial Recognition Technology

Probe Images

FACE Plus Case Management

Mug Shot Database
(Excluding Juveniles)

Facial Recognition Helps Solve Cases

- Wanted For Numerous Robberies
- Numerous Videos Available
- Offender was not known.
- Pierre Martin was highly ranked
- Was in custody at the time on an unrelated matter
- Made A Statement.
- Identified in a line-up
- Charged

Rodney Burton

Chicago man accused of burglaries

Man charged with Near North Side burglary

Rodney Burton Press Release

Facial Recognition Technology

Probe Image

FACE Plus Case Management

Mug Shot Database
(Excluding Juveniles)

Sneak & Peek

Facial Recognition In Action

- Wanted For Burglary
- Video Available
- Offender was not known.
- Rodney Burton bore a "striking resemblance" to the offender in the probe image.
- Offender placed on surveillance
- Caught in the act of burglary with proceeds & burglary tools.
- Charged with Burglary with over 20 Burglaries Cleared

In Custody

Quick New Session

Probe Editing

Working With Results

DataWorks *Plus*

Case Management:
Understanding & Working with Session Results

Image Comparison

DataWorks *Plus*

Case Management:
Image Comparison

Chart Comparison

DataWorks *Plus*

Case Management:
Chart Compare

Jose E. Reyes

Group Query
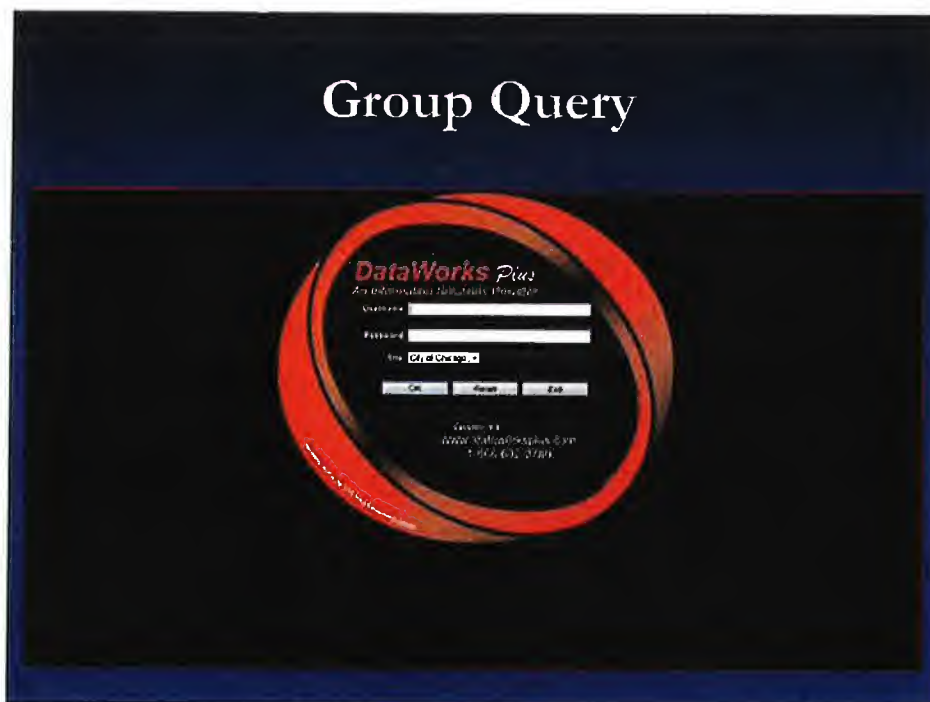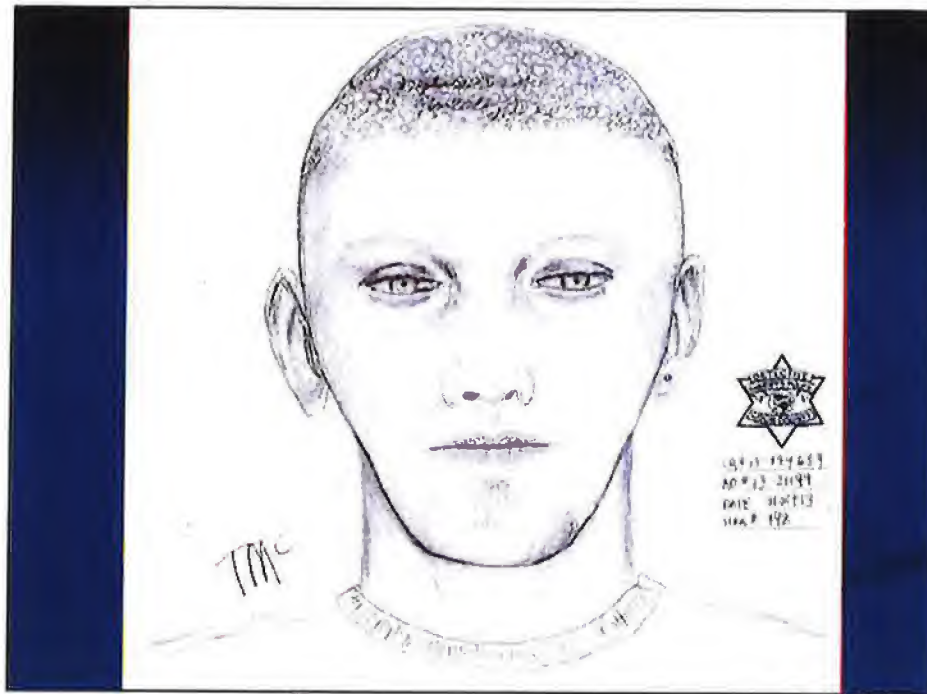
Example of Facial Rec. Reports

Remember

- The software is not an identification in and of itself.
- A high numeric score of a gallery image is <u>NOT probable cause to arrest nor is the fact that a potential suspect strikingly resembles your probe image</u>.

Remember (Continued)

- Numeric Scores can change based upon Measurements, Resolution, Focus, Lighting, Angles, and Pixilation, etc.
- A higher numeric score does not necessarily include or exclude an individual as a possible suspect.
- Avoid using terms such as match, using the numeric values of gallery images in reports, and stating that the software identified the gallery image as the offender.
- Avoid using the software to confirm or exclude an individual as a possible offender.
- Do not let the software become exculpatory evidence.

The End

Bureau of Detectives Facial Recognition Team	
Date of Report	10-DEC-13
RD#	HW-515467
Status	Clear Closed in Error By OCD Batch Procedure
IUCR	2090-Narcotics/Alter Forge Prescription
Date/Time	19:00 31-OCT-2013
Location	3019 W. Peterson
Location Code	193-Drug Store (Walgreen's)
Area	North
District/Beat	20
Victim	Walgreens [Firm]
Assigned Detective	None At This Time
Possible Suspect	CAHILL, Daniel IR# ▇▇▇▇▇

Facial Recognition Team Synopsis:

The Facial Recognition Team became aware of the above incident recorded under RD# HW-515467 by reviewing the DOC Police Impersonator Bulletin #2013-INF-307 dated 05-DEC-13. We reviewed the case report along with a still image of the offender that was shown on the Bulletin. We then utilized Data Works Face Plus Case Management System. The still image was imported into the software as probe images. 3D imaging was used to correct the position of the still image for use in the software. Upon reviewing the gallery images returned, we noted a gallery image that bore a striking resemblance to the probe image.

The gallery image returned that bore a striking resemblance to the probe image was CAHILL, Daniel IR# ▇▇▇▇▇

CAHILL was arrested 28-FEB-13 under identical circumstances and dress at 4032 W. Foster RD# HW-173737 CB# 18605579

From the narrative:

OFFENDER WAS PLACED IN CUSTODY IN THAT HE ENTERED THE JEWEL/OSCO PHARMACY AT 4032 W. FOSTER AVENUE AND TRIED TO PASS AN UNAUTHORIZED, STOLEN,FORGED PRESCIPTION TO THE JEWEL/OSCO PHARMACY TECH FOR "NORCO". WHEN R/O'S ENTERED THE STORE, THEY OBSERVED THE INDIVIDUAL NOW KNOWN AS CAHILL, DANIEL, A MALE WHITE, WEARING A CHICAGO POLICE DEPARTMENT REGULATION HAT AND A BLUE, HOODED JACKET WITH A CHICAGO POLICE EMBLEM. AS THE R/O'S APPROACHED THE OFFENDER, OFFICER FIALA ASKED THE OFFENDER IS HE WAS A POLICE OFFICER, TO WHICH HE REPLIED "NO". OFFICER FIALA THEN ASKED THE OFFENDER IF HE HAD IDENTIFICATION ON HIM, TO WHICH HE ALSO STATED "NO...."

CAHILL'S booking photos as shown below have many similarities with the offender in the above incident. The facial features (nose, eyes, mouth, etc) of both the offender and CAHILL are striking similar and the glasses worn by the offender are similar to glasses worn by CAHILL in some CB photos.

See the images below for examples:

Notice that the offender's and CAHILL's Facial features are strikingly similar.

Glasses of Offender and CAHILL are Very Similar

Cautions Regarding Facial Recognition

- This is only an investigative tool akin to using the mug shot database and entering demographic information.

- Instead of demographics, the software uses an analysis of various features and points on the face, the measurements of those points and an analysis of the spatial relationship between those points.

- The software does not identify offenders in and of itself.

- Being selected as a possible suspect is NOT probable cause to arrest nor is the fact that a potential suspect strikingly resembles your probe image.

- Avoid using terms such as match, using the numeric values of gallery images in reports, and stating that the software identified the gallery image as the offender.

Terminology

- Probe Image: The selected image that will be compared to the Clear Mug Shot Database using Face Plus.

- Gallery Image: Images that are selected by the Face Plus software that have a similar Facial Template to the Probe Image and are available for review in the software based upon their selection.

- Possible Suspect: Individuals whose Gallery Image strongly resembles the probe image and have been selected for further investigation by the User.

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Bureau of Detectives Facial Recognition Team

RD#	HW-406393
Status	Assigned to Field
IUCR	0890-Theft: From Building
Date/Time	1430-20:00 02-AUG-2013
Location	2402 W. McLean
Location Code	289-Residence Porch Hallway
Area	North
District/Beat	014/1431
Victim	LOIACANO, Jessica
Assigned Detective	Det. Bruce Kischner, #20282
Possible Suspect	KHATCHIK, Artin IR# ███

Facial Recognition Team Synopsis:

The Facial Recognition Team became aware of this incident after a news report on CBS News on 13-Nov-13. The team determined that one of the incidents the story was about was the above theft from building which occurred on 02-AUG-13. We reviewed case reports along with still photos of the offender removed from the video shown to the public on CBS news. We then utilized Data Works Face Plus Case Management System. The still images provided were imported into the software as probe images. Upon reviewing the gallery images returned, we noted a gallery image that bore a striking resemblance to the probe images.

The gallery image returned that bore a striking resemblance to the probe image was KHATCHIK, Artin IR# ███

KHATCHIK is currently in custody at Cook County Department of Corrections Division 2 inmate # 2013-0913071 and is being held on no bond for numerous charges including burglary on an incident reported under RD# HW369686 that fits the M.O. of this particular offense. KHATCHIK is resides in Area North at 6200 N. Sacramento. His next court date is 16-DEC-2013.

KHATCHIK has very similar facial characteristics to the probe images. He additionally has tattoos on the upper right and left arms as does the offender in the probe images.

The team believes based upon these similarities, his arrest history, and the fact that is currently awaiting trial on an incident that matches the circumstances of this case, that KHATCHIK, Artin is a possible suspect in the Theft: From Building that occurred on 1430-20:00 02-AUG-2013 at 2402 W. McLean under RD# HW-406393.

See the images below for examples.

Similar Ear Shape

Similar Facial Features
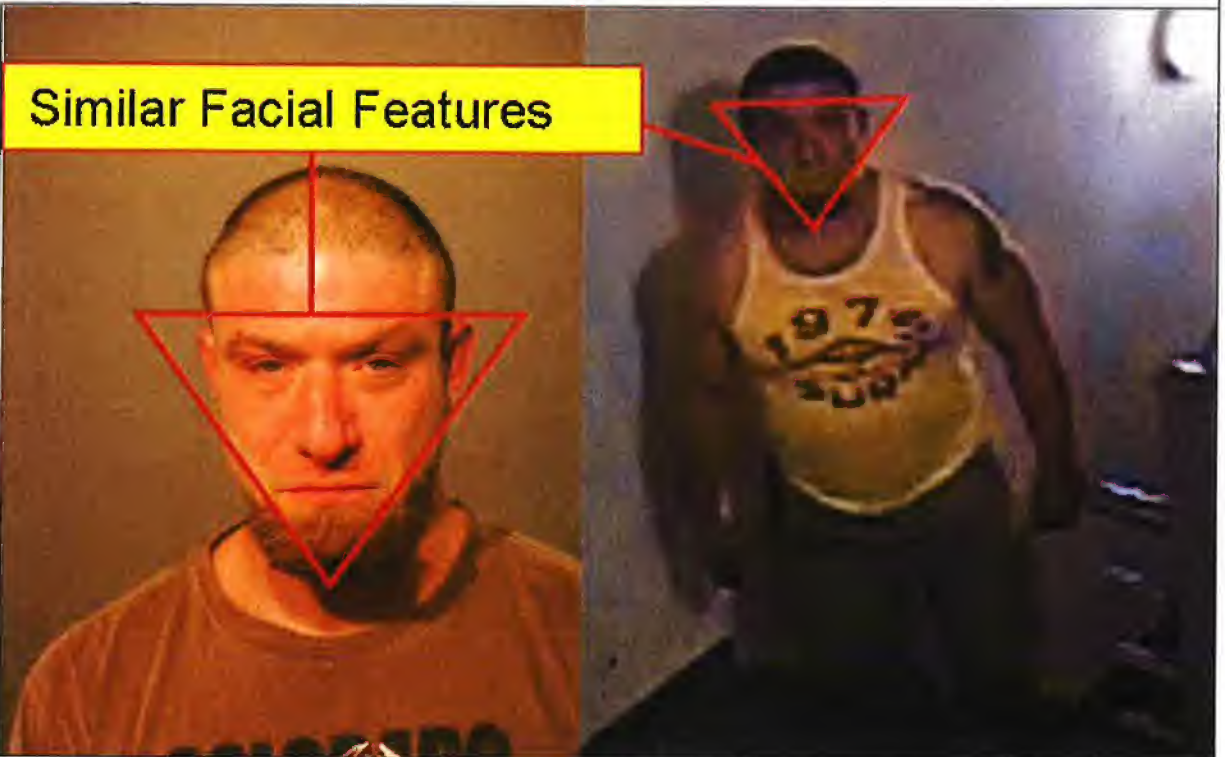
Similar Hairline and Beard

Cautions Regarding Facial Recognition

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- The software does not identify offenders in and of itself.

- Being selected as a possible suspect is <u>NOT probable cause to arrest nor is the fact that a potential suspect strikingly resembles your probe image</u>.

- Avoid using terms such as match, using the numeric values of gallery images in reports, and stating that the software identified the gallery image as the offender.

Terminology

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LOOKOUT BULLETIN
ARRESTED

MARTIN, PIERRE
CB#: 18692667
IR#: ▮▮▮▮
Pinkline Kostner 09 Feb 13
Arrest Date: 01-JUL-2013
Charge(s): ROBBERY - ARMED W/ FIREARM
Address of Arrest: 5101 S WENTWORTH AVE
Sex/Race/Age: M/BLK/24
DOB: ▮▮▮▮ 1988
HT/WT: 601/180
HW151420
Gang Affiliation:

DATE: Feb 9, 2013   **TIME:** 19:00 Hrs   **RD#:** HW151420

LOCATION: Pinkline Kostner

ABOVE PERSON HAS BEEN CHARGED WITH MULTIPLE ROBBERIES WHICH OCCURRED ON THE PINKLINE NEAR KOSTNER. CHICAGO POLICE FACIAL MATCHING TECHNOLOGY WAS USED TO LOCATE THIS SUBJECT WHO WAS THEN POSITIVELY IDENTIFIED BY TWO VICTIMS AFTER LINE UPS WERE CONDUCTED. HE LATER ADMITTED HIS INVOLVMENT IN THESE CRIMES

FOR INFORMATION CONTACT PUBLIC TRANSPORTATION 24 Hr HOTLINE: 312 745-4443
OR CALL JIM HIGGINS CTA Security Manager Cell: (773)▮▮▮▮

Man charged with kidnapping, assaulting girl kept in isolation at jail

Email   Tweet 10   Recommend 58   8+1 2

Jose E. Reyes, 28, of the 4900 block of West North Avenue in Chicago, faces new charges in relation to the Sept. 30 kidnapping of a 3-year-old Mundelein girl. (Mundelein Police Department)

By Dan Waters
Tribune reporter
11:22 a.m. CST, November 14, 2013

A man charged with kidnapping and sexually assaulting a 3-year-old Mundelein girl is being held in isolation at the Lake County Jail, authorities said during a brief court appearance this morning.

After the hearing, prosecutors would not explain the reason for keeping Jose Reyes away from other inmates.

Reyes, 28, of the 4900 block of West North Avenue in Chicago, has been charged with aggravated kidnapping and kidnapping, predatory criminal sexual assault, making child pornography, and possessing child pornography. He is being held in lieu of $5 million bail.

Lake County Circuit Court Judge Christopher Stride entered not guilty pleas on Reyes' behalf, and scheduled a pretrial hearing for Dec. 10 and Jan. 21 trial in before Lake County Circuit Court Judge John Phillips.

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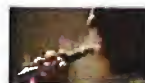
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Reyes, now represented by the public defender's office, told Stride that his family has been seeking a private lawyer to represent him. Stride told him to get the paperwork for a change in representation filed with the court.

Authorities say Reyes abducted the girl from outside her home in the 500 block of Deepwoods Drive in Mundelein at about 5:30 p.m. Sept. 30. They allege Reyes offered the girl and her 9-year-old sister candy before grabbing the 3-year-old and putting her into his car.

Police said Reyes dropped the girl off about 30 minutes later in a nearby parking lot.

Police gathered surveillance video from a private residence nearby that helped them identify the car they say Reyes was driving, a 2007 black, four-door Hyundai Accent.

Using that, along with a sketch of Reyes created with the help of the 9-year-old sister and the sister's recollection of one of the numbers in the car's license plate, police said they linked the vehicle to a speeding ticket issued to Reyes in Mundelein in 2012.

Reyes was arrested at his job in Libertyville on Oct. 2.

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FACE CROOK

Cops say Pierre Martin confessed to armed robbery aboard a CTA train after he became the first person arrested by Chicago Police using facial-recognition software

Image sur line: la vi l'USA les seuls dans la surveillance d'une sur d'une sur cp
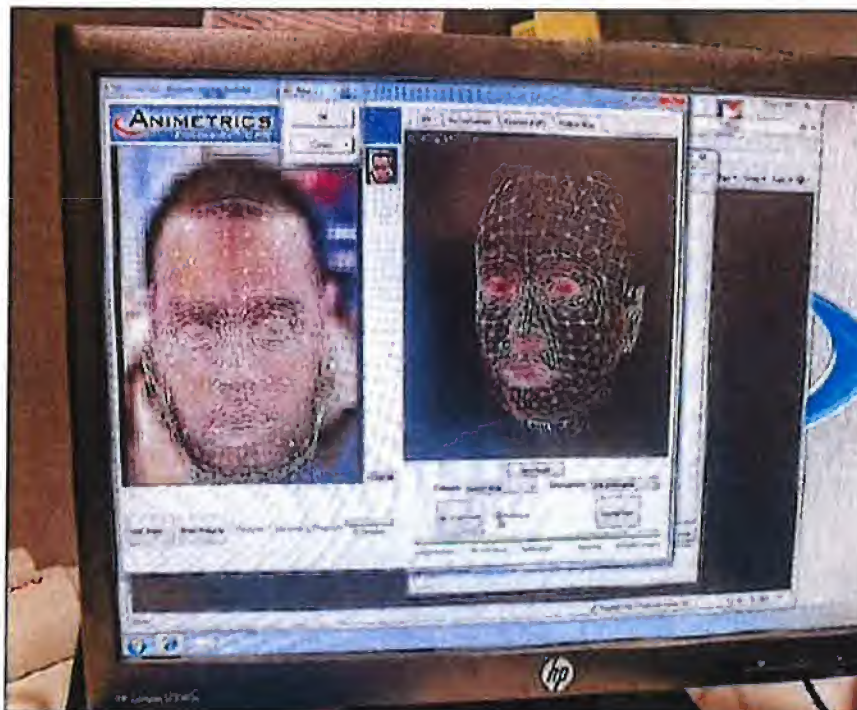
The new software can compare a photo or video to over 4.5 million mugshots in the database.

Pierre Martin's face sealed his fate.

Earlier this year, Martin became the first person in Chicago arrested as a result of a little-known Chicago Police Department high-tech program just getting started, which uses facial-recognition software.

Police had a photo captured on a CTA surveillance camera on Jan. 28 of a suspected mugger, looking to the side, after he had just allegedly stolen a cellphone from a man at gunpoint on a Pink Line train.

Police also had an ocean of photos for comparison — 4.5 million criminal booking shots. They ran the program. And Pierre Martin ranked No. 1 on a list no one wants to top.

Martin's mugshot ranked best among possible matches, but the investigation didn't stop there. Witnesses identified him in photo lineups, and he confessed following his May arrest, police allege.

Investigators used software called NeoFace, one of the facial-recognition tools being used by police departments across the country. It could be potentially potent in Chicago, with 24,000 surveillance cameras tied into the city's computer network. Civil libertarians, though, are not happy, with the potential they see for abuse.

Martin, 34, is a suspect in at least two CTA robberies, said Chicago Police Cmdr. Jonathan Lewin, who oversees information technology for the police and fire departments and the 911 center.

"This was our first success," Lewin
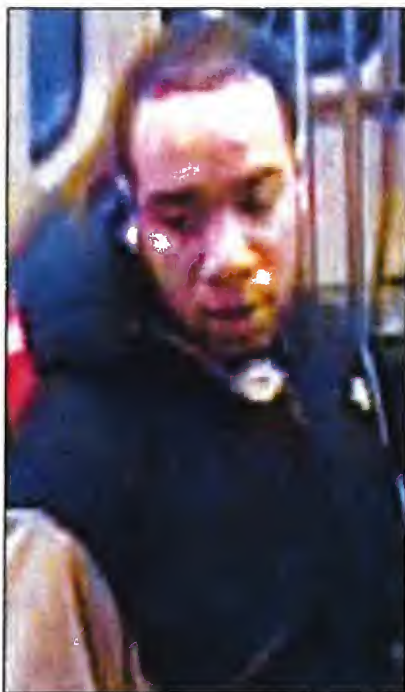
said of the NeoFace program. So far, Martin is the only one police have arrested with help from the software but Lewin predicted, "as we pick up our training, you will see ongoing successes."

The Police Department fully launched the NeoFace system in mid-June. The department's three detective branches and the Criminal Information Prevention Center in police headquarters have been equipped with NeoFace work stations. The department is now training officers to use the system.

The police department paid for the

technology through a $5.4 million federal Transportation Security Administration grant. The grant, obtained through the CTA, includes an upgrade of the Police Department's computer network bandwidth to allow for quicker transmission of photo images.

Lewin said he did not know how many photos might be submitted for matches, but he said detectives routinely seek surveillance photos as part of their investigations. Over the years, it has become easier to obtain them with all the security cameras linked into the city's computer network, along with the thousands of businesses that have their own cameras.

Chicago Police detectives will be asked to submit unidentified surveillance photos from cold cases for possible matches in the NeoFace system, Lewin said.

Other departments are already benefitting from the high-tech tool.

In Pennsylvania, more than 800 law enforcement agencies are part of an organization that conducts training sessions in facial-recognition technology every two weeks, Lewin said. Officers are asked to bring unidentified photos of suspects to the training sessions — and at least one is identified at every session, Lewin was told.

The NeoFace technology allows for

Pierre Martin was the first arrest by Chicago Police using facial-recognition software. The program was able to identify Martin even though the suspect was looking off to the side in the CTA surveillance image (right).

a match even when part of the subject's face might be hidden by a hat or sunglasses — or the subject's head is turned, like the case of the CTA mugger.

The quality of the videos can vary widely depending on what type of camera is used. The CTA image used to nab Martin came from a high-definition camera, but NeoFace can analyze regular definition images, too, Lewin said.

The American Civil Liberties Union of Illinois is wary of the department's use of facial-recognition technology, especially with recent revelations about the National Security Agency's phone surveillance practices.

In a report released about two years

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ago, the ACLU recommended that police should use such technology only when they have probable cause that the person in the image was involved in a crime.

"Our position continues to be the same," said Adam Schwartz, a staff lawyer for the ACLU of Illinois, adding that he was unaware police were now using facial-recognition technology.

Lewin said the NeoFace technology is being used only "in active criminal cases with an unidentified criminal subject." He also said the system is unable to perform "realtime surveillance of subjects. It's only post-event."

A still image must be submitted for comparison, Lewin said.

"There will absolutely be no random surveillance — and facial recognition — of subjects in the public way," he said.

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FACE CROOK NOT GUILTY

Chicago Sun-Times
14 Jul 2013 (1)

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— I think you mean Breitbart and Faux News

Joy Gritz and 1 others commented on "TRUMP WINS MEDIA BATTLE":

💬 **Mad as Hell Boycott - Fight Fake News** (+1)

Joy Gritz supported opinion

💬 **CNN Has Officially Become the Laughing Stock of Media** (+1)

thehound supported opinion

💬 **Mad as Hell Boycott - Fight Fake News** (+1)

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USA TODAY US Edition

Chicago has yet another high-tech tool in its already bursting shed of surveillance gear, which finally netted a success for the police department. The Sun-Times reports police arrested Pierre Martin in connection with a suspected robbery on the CTA with the help of software called NeoFace. The Chicago Police Department began using the software in mid June after purchasing it with a $5.4 million federal grant the CTA obtained through the Transportation Security Administration.

NeoFace software captures "latent face" images from photographs or videos, which enhances images and then searches them against repositories of mugshots. In Martin's case, a photo taken from a CTA surveillance camera of a suspected mugger showing the suspect from the side ranked as one of the best possible matches. Police allege he confessed after witnesses identified him in a lineup. Chicago Police Commander Jonathan Lewin said, "This was our first success, as we pick up our training, you will see ongoing successes."

When coupled with the City's networked surveillance system of more than 24,000 cameras, the NeoFace software has the potential for massive amounts of abuse. Though Commander Lewin said the software is unable to provide real time monitoring and would only be used in "in active criminal cases with an unidentified criminal subject," civil libertarians see a darker side. When the ACLU of Illinois released a report in 2011 criticizing the growing surveillance network and laxed regulations, legal director Harvey Grossman said:

> "Given Chicago's history of unlawful political surveillance, including the notorious 'Red Squad,' it is critical that appropriate controls be put in place to rein in these powerful and pervasive surveillance cameras now available to law enforcement throughout the City."

Adam Schwartz, a staff lawyer for the ACLU said the organization was unaware of the software's use. In the 2011 report, he also warned of the dark side of surveillance, saying "The ubiquity and technological reach of Chicago's surveillance camera system present a fundamental threat to the privacy and First Amendment rights of all persons in Chicago."

Watch a promotion for NeoFace below:

Contact the author of this article or email tips@chicagoist.com with further questions, comments or tips.

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October 23, 2015

Chicago cops, Motorola bring streaming video to crime scenes

By JOHN PLETZ

Photo by Alex Schmidt

Chicago's 7th police district, in Englewood, recorded 29 shootings and five homicides in August, with gunshots and sirens providing all-too-familiar sounds of summer on the South Side.

But there was something else in the air that the Chicago Police Department hopes one day will help it better combat crime. Police live-streamed a high-definition feed from a video camera to a moving patrol car for the first time, using a small wireless network built **for the test by the U.S. Department of Homeland Security** and Motorola Solutions.

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Directorate. "It showed a lot of promising capability," such as maintaining a video feed to a car moving up to 50 miles per hour.

Chicago is an ideal test location because it has the biggest camera network of any city in the country and to a broadband LTE, or long-term evolution, network built by Motorola for the 2012 NATO Summit and donated to the city. Schaumburg-based Motorola, the world's biggest provider of radios and dispatch equipment, has a keen interest in demonstrating public-safety LTE; management sees it becoming a $1 billion business, providing **growth beyond Motorola's historic public-safety radio division.**

ing video in real time to police officers has been on the city's wish list since the first video cameras were d by the city more than a decade ago as part of **"Operation Virtual Shield."** Today more than 25,000 s are available across the city, from crime-surveillance cameras to those at the airports. Thousands more are owned by the Chicago Transit Authority, Chicago Park District, Chicago Public Schools and businesses.

The Department of Homeland Security and Chicago police will be discussing **the test** this weekend at the International Association of Chiefs of Police conference at McCormick Place.

"This is something we've wanted to do forever," says Jonathan Lewin, deputy chief of support services at the Police Department. "We talked about this when the camera program started in 2003, but it wasn't practical."

While police on patrol technically could control video cameras—and watch videos—from their cars, the equipment was big and it relied on Wi-Fi, which is useful only up to a few hundred feet away.

That changed with LTE, a mobile broadband technology that rolled out five years ago, providing much greater data capacity. With civilians able to watch live sports on their phones while standing on an el platform, it shouldn't be a problem for police to stream live video from a crime scene, right?

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The bigger issue is that when an emergency occurs—when police and firefighters would want the new technology most—it's least likely to be available because public wireless networks get overloaded.

ISSUES welcome a new generation: millennials

se, the prospect of hundreds of officers being able to watch real-time video raises privacy concerns. As cities from Los Angeles to New York have **expanded surveillance operations,** often using Homeland Security anti-terrorism funds, complaints have erupted. In Seattle, **police canceled plans** to employ high-resolution camera-equipped drones after public protests.

How sports data firm Stats is calculating a new direction
's a reported crime or activity to which police are going and you're giving them additional information, that's core of our concern," says Ed Yohnka, a spokesman for the American Civil Liberties Union of Illinois. "You have this blanket of cameras across the city that are very powerful and can identify someone."

The Police Department says it long ago developed policies with privacy safeguards to assuage concerns about Big Brother with a Badge. Lewin says facial recognition is applied to video only after the fact to identify suspects, not in real time. Users have to log in, and the department can go back later and view what the officer was watching. The city requires permission from building owners to see live video from

interior feeds and says it doesn't archive such video. Also, only staff at police facilities can control the city's cameras and monitor those in private hands.

'LACK OF TRANSPARENCY'

The ACLU wants the Police Department's guidelines to be approved by the City Council and subject to public disclosure and debate. But that hasn't happened. "You have this lack of transparency with this really powerful surveillance tool that continues to cause concern," Yohnka says. "This is the time to create formal guidelines everyone can see, everyone can judge and everyone can know."

Video is just one piece. Police eventually would like to integrate other tools, such as ShotSpotter, audio technology that identifies the locations of gunshots. Police already can deliver floor plans, evacuation routes and incident histories involving particular addresses to officers in the field.

A video network also could stream data back to headquarters from dash-mounted or body-worn cameras. The new technology still is years away because it will require a network, called FirstNet, which is only in the planning stages, and equipment that is just beginning to roll out. FirstNet would be built using spectrum vacated when television broadcasters switched to digital a few years ago. The feds have **promised about $7 billion** from spectrum sales, but experts say the buildout could take three times that much. Specialized smartphones to operate at that frequency are only becoming available now.

Until then, Chicago will be waiting—and watching.

Chicago Police Department   Motorola Inc.   Motorola Solutions   More +

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Chicago PD: What Modern Law Enforcement Agencies Need to Know About Modern Public Safety Technology Innovations

Author: Jonathan Lewin, Commander, CPD

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Date: 2014-09-10

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The advent of Internet of Everything (IoE) and evolution of video analytics has expanded the capabilities of connected cameras and enhanced the delivery of insights into forensic investigations. Law enforcement and fire departments around the country are leveraging new technologies to better inform their personnel, increase situational awareness, respond to emergencies, and protect citizens. Next-Generation 9-1-1 is becoming a reality for many local municipalities as they incorporate modern digital devices within their everyday routines.

The Chicago Police Department (CPD), recognized nationally as a technology innovator, is one such example. CPD's CLEAR (Citizen and Law Enforcement Analysis and Reporting) system is the largest transaction police database in the United States. During a Cisco discussion panel on the impact of Internet of Things (IoT) in the public sector, I showcased CLEAR as a system, which brings together data from a wide range of sources to identify hotspots of potential crimes. In essence, CLEAR drives all aspects of our operations, including incident and arrest reporting, crime mapping and analysis, advanced crime prediction functions, command and control capabilities during major events, and management accountability.

The CLEAR system plays a major role in analyzing the City of Chicago's Operation Virtual Shield (OVS) system, which is the most extensive municipal camera network in the nation with over 25,000 cameras. The video surveillance system consists of fixed cameras, a private camera federation, and mobile assets such as video trailers, trucks, helicopters, and boats. Funded primarily though the U.S. Department of Homeland Security, the video system is in place to ensure public safety and to protect critical infrastructure throughout the city.

Video provides situational awareness during major planned and unplanned events and supplements the work of police officers in the field to fight crime. Our 176-mile fiber optic network provides the backbone for connectivity to the OVS system. The effectiveness of this platform is enhanced through advanced analytics capabilities such as facial recognition, which allows unknown criminal suspects captured on camera to be identified through post-event matching against a library of almost five million digital mug shots of prior arrestees.

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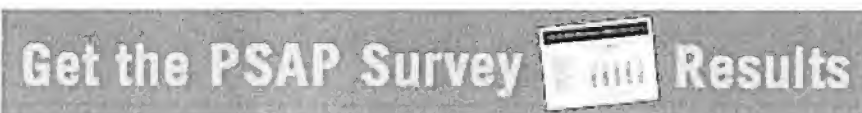
Alongside video capabilities, mobile devices and new mobility applications support a wide number of public sector priorities, which include citizen services and public safety. For instance, mobile devices allow first responders to use handheld tablets and phones to increase situational awareness. And new security solutions such as IP video surveillance and physical access controls ensure greater protection without increasing costs.

Right: The Chicago Police 9-1-1 Communications Center
[9-1-1 Magazine file photo]

We have 2,500 police vehicles that are equipped with state-of-the-art mobile data terminals that utilize a high speed wireless connection to access the police department's advanced applications including crime mapping, electronic dispatch of 9-1-1 calls for service, criminal history information, wanted persons and vehicles, critical facilities information on key infrastructure, global positioning, and real-time automated incident and suspicious activity reporting. This platform allows first responders to access critical situational awareness for improved officer safety and more efficient service delivery.

More *efficient* response time saves **time**

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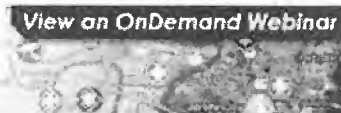
Moving forward, the CPD and Office of Emergency Management and Communications are working with the U.S. Department of Homeland Security (DHS) Science and Technology on a high speed public safety broadband LTE (Long Term Evolution) pilot program to test broadband coverage in Chicago's South side. This pilot will allow us to become one of the first major cities to begin use of the FirstNet public safety communications spectrum to deliver more content to mobile computers in police vehicles.

In our times, the threats to public safety are ever changing. And in order to be one step ahead of our adversaries and circumstances, we need to be smart, nimble, and creative. Essentially, Communications are the foundation of everything we're doing. And moving in the same vein as CPD, we all need to look beyond what currently exists and enhance the communication pathways in our public safety systems. By embracing new technological trends, we will equip those who work in public safety professions with the tools and skills they need to do their jobs.

Commander Jonathan Lewin has been a sworn member of the Chicago Police Department since 1991 and serves as Managing Deputy Director of Public Safety Information Technology for the City of Chicago, where he oversees surveillance cameras and related systems, mobile computers, voice and data communications, crime mapping, business intelligence functions, and Predictive Policing. Lewin was an adjunct lecturer at the University of Illinois at Chicago and is a peer reviewer for the National Institute of Justice. He is a member of the U.S. Department of Justice Police Technology Futures Group, exploring national best practices throughout the Nation, and serves as vice-chairman of the Illinois Integrated Justice Information System (IIJIS).

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Chicago Police Department	**General Order G03-05**
VIDEO SURVEILLANCE TECHNOLOGY	

ISSUE DATE:	22 February 2012	**EFFECTIVE DATE:**	22 February 2012
RESCINDS:	Version dated 14 April 2011; G11-03		
INDEX CATEGORY:	Field Operations		

I.   GUIDING PRINCIPLES

A.   The use of video surveillance technology can provide members with an invaluable instrument to increase their safety and enhance criminal prosecution by providing powerful evidence of criminal activity. Consistent with the mission of the Chicago Police Department, the Department will implement video surveillance technology as part of its anti-crime strategy to:

1.   enhance public safety and security in public areas, while reducing the fear of crime.

2.   prevent, deter, and identify criminal activity, identify suspects, and gather evidence.

3.   target areas of gang and narcotics activity on the public way. Target areas are identified using information gathered from narcotics-related calls for service, public-violence incidents, community input and complaints, and Department analysis and intelligence. Taken together, this information provides a clear picture of the areas in greatest need of police video surveillance.

4.   observe prescheduled public events for approved investigative purposes (e.g., Taste of Chicago, parades, protests).

5.   assist districts, units, and tactical personnel in criminal investigations (e.g., narcotics, thefts, covert operations).

6.   respond to major critical incidents.

7.   document officer conduct during citizen interactions and police actions to safeguard the rights of the public and police officers, protect against unwarranted citizen complaints, and limit civil liabilities.

8.   reduce the cost and impact of crime to a community.

9.   improve the allocation and deployment of Department resources.

B.   The use of video surveillance technology will be conducted in a professional and ethical manner, within accepted legal concepts regarding privacy. All information and recorded images obtained through the use of video surveillance technology will be used strictly for law enforcement purposes and will be preserved with utmost integrity and confidentiality consistent with Department policy and legal rules governing the handling of evidence and criminal justice records.

C.   The design, implementation, and enhancement of any Department video surveillance technology will recognize legal parameters that both limit and expand the use of cameras in the public space.

II.   GENERAL GUIDELINES

A.   Department members will receive training concerning the First Amendment, the Fourth Amendment, consent-to-search issues, and the proper operation of the video surveillance equipment prior to being authorized to use any Department-authorized video surveillance technology.

B.   When using any video surveillance technology, Department members will:

1.   only use Department-approved equipment and have a proper law enforcement purpose. **No unauthorized recording, viewing, reproduction, retention, or distribution is permitted.**

2. conform to all laws applicable to the use of video surveillance technology, including viewing and recording images consistent with the First and Fourth Amendment.

3. only monitor public areas and public activities where no legally protected reasonable expectation of privacy exists (e.g., street, sidewalk, park).

4. except while investigating a crime committed by a person whose description is known, not base an investigation or the use of video enhancement or tracking capabilities on individual characteristics or classifications including, but not limited to, race, gender, sexual orientation, national origin, or disability.

> **NOTE:** Department members will continue to adhere to the polices and guidelines outlined in the Department directives entitled "**Prohibition Regarding Racial Profiling and Other Bias-Base Policing**" and "**The First Amendment and Police Actions**."

5. follow the procedures outlined in the video surveillance technology training.

C. The appropriate bureau *chief* may authorize the use of additional video surveillance technology or deviations from this policy by specialized units under their command provided that the technology and/or deviations are in compliance with all laws applicable to the use of video surveillance technology, including viewing and recording images consistent with the First and Fourth Amendment.

1. This authorization will be in the form of a unit-level directive providing specific justifications and the recommended usage, retention, and auditing guidelines.

2. Copies of this authorization will be maintained in each bureau with copies forwarded to Public Safety Information Technology and the Office of Legal Affairs.

D. Supervisors commanding Department members assigned to use video surveillance technology will:

1. monitor subordinates to ensure the video surveillance technology is utilized according to all legal requirements, procedures set in this directive, and the training provided. Any discrepancies or conflicts will be brought to the attention of the *station supervisor or designated unit supervisor* for resolution.

2. appropriately document the monitoring of video surveillance technology usage including any instances of additional training, corrective measures, or disciplinary actions.

(Items indicated by *italic/double underline* were added or revised)

Authenticated by: RMJ

Garry F. McCarthy
Superintendent of Police

10-175/12-003 mwk/TRH

	Chicago Police Department	**General Order G09-01-01**
	ACCESS TO COMPUTERIZED DATA, DISSEMINATION AND RETENTION OF COMPUTER DATA	

ISSUE DATE:	03 February 2012	**EFFECTIVE DATE:**	03 February 2012	
RESCINDS:	02 December 2011version; G98-07-04A			
INDEX CATEGORY:	Information Management			

I. PURPOSE

This directive:

A. defines Department policy specific to acquiring, entering, accessing, disseminating and retaining data stored in the Department's computerized information systems.

B. delineates responsibilities for Department members when acquiring, entering, accessing, disseminating and purging data.

C. continues and expands established guidelines for the collection, storage, access, dissemination and retention of computerized information.

D. establishes policy and procedures for sharing computerized information with outside law enforcement agencies.

E. establishes mandates for compliance with Title 28 Code of Federal Regulations Part 23 (28 CFR 23) as it applies to Criminal Intelligence Information shared by the Department with outside law enforcement agencies.

II. POLICY

A. Information gathered by Department members will be obtained by lawful means in a manner consistent with Department policies, practices and procedures.

B. Entry of data into the Department's computerized information systems is restricted to authorized Department members.

C. Access to various classifications of information stored on the Department's computerized information systems will be restricted to those Department members authorized by Public Safety Information Technology (PSIT).

D. Information contained within the Department's computerized information systems will be disseminated in accordance with Department policy and in compliance with all federal, state and local laws.

E. Department members will not purge any information stored in the Department's computerized information systems, unless explicitly authorized.

F. Incidental sharing of information from the Department's computerized information systems or remote access by an outside law enforcement agency will conform to the policies and procedures outlined in this directive and will comply with 28 CFR 23.

III. GENERAL INFORMATION

A. In order to meet the information needs of its members, the Chicago Police Department utilizes a centralized management approach to the processing, handling, and analysis of computerized information.

B. Information made available on the Department's computerized information systems may originate from outside agencies. However, Criminal Intelligence Information shall only be entered into the Department's computerized information systems by Department members acting within their prescribed capacity and in accordance with this directive and applicable federal, state and local laws.

C. Computerized files on known active criminals will be used to advise members of information which could:

1. provide investigative leads.

2. provide a measure of officer safety.

   NOTE: **This information is, in and of itself, not authority to place an individual under arrest, nor is it cause for unreasonable restraint or search of the individual.**

D. The interface tools developed and/or used by the Department to access the computerized information systems are intended for the use of Department members lawfully engaged in the performance of their prescribed duties.

E. Computer-generated forms that replace CPD printed forms will use the same form number and initiation or revision date as the printed form. All required information in the original CPD printed form will also be required in the computerized version. Information fields not contained in the original printed form will not be added to the computerized version. No CPD form will be made available for use on the Department's computerized information systems without the Information Systems Development Group approval.

F. Members creating forms/reports that are computer-generated will create a footer at the lower left hand corner of each page stating: "computer generated form" and place the appropriate CPD form number and initiation or revision date next to it.

IV. COLLECTION AND ENTRY OF INFORMATION

A. Department members will collect information in a lawful manner and in compliance with Department directives and applicable federal, state and local laws.

B. Prior to submission for entry into the Department's computerized information systems, Department members making a submission will verify the information contained in the entry.

C. Members assigned to enter data will be responsible for accurately entering the data according to the prescribed guidelines.

D. Data entered into the Department's computer information systems is subject to the same level of supervisory review as is currently in place for reports submitted on formsets. Information will be attributed to the submitting officer(s).

E. *Department members will not retain information about any individual or organization gathered solely on the basis of religious, political, or social views or activities; participation in a particular noncriminal organization or lawful event; or race, ethnicity, citizenship, place of origin, age, disability, gender, or sexual orientation. The investigation and related documentation must comply with the Department directives entitled* **"The First Amendment and Police Actions"** *and* **"Information Report System"** *and all associated addenda.*

   NOTE: This prohibition does not apply when the individual or entity is not the subject of an investigation and the reference is Non-criminal Identifying Information tied to an existing criminal report or subject record. Retrieval and use of such information, especially when taken out of context, will be clearly labeled as Non-criminal Identifying Information.

F. Whenever a member assigned/detailed to the Bureau of Detectives or the Bureau of Organized Crime identifies an individual as an active criminal and seeks to enter such information into a criminal intelligence database, the member will:

1. verify that the individual has been assigned an IR, SID and/or FBI number.

2. prepare a Suspect Person/Suspect Vehicle card (CPD-11.460).

3. ensure that the data is current and accurate.

4. forward completed Suspect Person/Suspect Vehicle cards to the division chief.

G. The Chief, Bureau of Detectives and the Chief, Organized Crime will:

    1. review submitted Suspect Person/Suspect Vehicle cards for conformance to required criteria.

    2. ensure only those submissions meeting the established criteria are forwarded to be entered into the Department's computerized information systems.

        a. After entry into the Department's computerized information systems, the Suspect Person/Suspect Vehicle card will be returned to the originating unit.

        b. Unit files will be maintained in accordance with the forms retention schedule.

    3. conduct periodic audits with unit commanders, as outlined in Item IX entitled "Retention."

    4. authorize the purging of records as appropriate.

V. STORAGE AND SECURITY

A. Public Safety Information Technology (PSIT) is charged with the responsibility of computerized information systems storage and security issues as delineated in the Department directive entitled "**Computerized Information Systems**."

B. Department members have no expectation of privacy in the use of Department computers or related equipment. Individuals may be subject to monitoring while using any of the Department's computers or accessing the computerized information systems.

C. Each Department member will be issued a Logon ID and will be responsible for its security and accountable for its use. Members will not use another member's logon ID under any circumstances. All access including, but not limited to, Local Area Networks (LANs), Wide Area Networks (WANs), information system interfaces, entry terminals and administration terminals requires an authorized log-on and password.

D. Department computerized information systems are designed with transaction logs for the purpose of establishing audit trails and back-up sets.

E. Periodic audits for 28 CFR 23 compliance will be conducted to monitor Criminal Intelligence Information access and usage.

    1. PSIT will establish procedures to conduct audits of electronic submissions.

    2. The Inspection Division will establish procedures to conduct periodic audits of "Inquiry Request Worksheets" (CPD-11.704).

VI. ACCESS TO COMPUTERIZED INFORMATION

A. Use by Department Members

    1. Access to information or files maintained in the Department's computerized information system is granted only when authorized and by means of the log-on process on Department owned/leased equipment through authorized networking protocols and procedures.

    2. Any member who accesses information through the Department's computerized information systems is accountable for the appropriate use and disposal of the information. Access to information is restricted to official police business. Access of information for personal or other reasons is strictly prohibited.

    3. Department personnel are required to clear all open fields and **log-off** from the access device when they have completed the task(s) that required them to access the system.

    4. Access to Department computerized information systems is restricted by the following design features:

        a. Logon IDs assigned for the appropriate approved level of access.

        b. Limited access to information based upon the classification of the information and the authorization of the member accessing the system.

        c.   Labeling of information, both on screen and in printed form, based upon its level of sensitivity and its classification as either Criminal Intelligence Information or Non-criminal Identifying Information.

        d.   daily purges of invalidated Logon IDs.

B.   Remote Access by Outside Agencies

The Chicago Police Department may enter into agreements with outside agencies to provide limited remote access to its computerized information systems. Remote access to the Department's computerized information systems will only be permitted after compliance with all of the following:

1.   the Superintendent of Police has given written preliminary approval, and

2.   the requesting agency head has submitted, for the approval of the Superintendent, an interagency agreement. The interagency agreement will contain the following provisions:

        a.   a description of the interface tool(s) and access methods to be employed.

        b.   an acknowledgment and assumption of responsibility for all use or misuse of information obtained from Department computerized information systems.

        c.   a statement that the requesting agency is in full compliance with 28 CFR 23.

        d.   a specific agreement to:

            (1)   ensure secure access points,

            (2)   comply with all procedural protocol required by PSIT,

            (3)   ensure that only authorized members are assigned unique Logon IDs provided by PSIT,

            (4)   notify PSIT of any terminations of privilege associated with a Logon ID,

            (5)   notify PSIT of any unusual occurrences or breaches of policy,

            (6)   monitor and periodically audit usage by its members, and

            (7)   train personnel having access to the Department's computerized information systems on 28 CFR 23 compliance issues.

3.   the requesting agency has furnished a copy of their 28 CFR 23 policy.

4.   execution of the agreement by the Superintendent of Police.

5.   the interagency agreement and appropriate documentation have been forwarded to the Office of Justice Programs and been approved.

6.   the Department has notified the grantor of any funding relating to the project.

7.   approval of the Office of Justice Programs; the Department may initiate remote access capability to the requesting agency when:

        a.   the Department has trained designated members of the outside agency in the proper use of the interface tool(s) and issues involving 28 CFR 23 compliance, and

        b.   the Superintendent has given final approval to the project.

VII.   DISSEMINATION OF INFORMATION

Records, files or reports may be printed from computerized information systems and/or duplicated by Department personnel for Department use only, except as provided in this section.

A.   The contents of any record, file or report will not be exhibited or divulged to any non-Departmental person or entity except in the performance of official duties and in accordance with Department policy, and applicable federal, state and local laws.

B.   Public Release

1.   Any information provided to the public will be released in accordance with Department directives and in compliance with federal, state and local laws.

2.   Any mechanism allowing public access shall be reviewed by the Information Systems Development Group to ensure that information retrieved is not of a sensitive nature and is in compliance with the provisions enumerated in Item VII-B-1.

3.   Command staff members may release relevant information to community groups or private citizens, in compliance with Department directives and all federal, state and local laws.

NOTE: Department members may consult with the Office of Legal Affairs prior to dissemination of information to the public to determine if any prohibition on the release exists.

4.   Reports and graphs provided to the public will contain a unit identifier, a date and a disclaimer on the last page of each report.

DISCLAIMER: This document has been generated by the Chicago Police Department. Information and statistics contained within this report may not be verified and may vary from other documents prepared by the Department using other methods or procedures.

C.   Incidental Sharing of Information with Outside Agencies

The Department recognizes that some criminal activity may affect multiple jurisdictions. Whenever possible, the Department will provide outside law enforcement agencies engaged in an active investigation access to information which is relevant to that investigation.

1.   Department members receiving a request for information from an outside agency, whether in person, by phone or by fax, will:

a.   verify the identity and agency of the requester prior to making a query.

b.   submit a query if satisfied that the prerequisites in Item VII-C-1-a have been met. If a query is made on behalf of an outside agency and the Department's computerized information system returns:

(1)   data which is classified as "Criminal Intelligence Information," the member will have a sworn supervisor approve the "Inquiry Request Worksheet" (CPD-11.704) prior to disseminating the information.

(2)   data which is labeled as "Non-criminal Identifying Information," the member will determine if the information is relevant to the requester's needs.

(a)   If the "Non-criminal Identifying Information" is not relevant to the inquiring agency's needs, the member will not divulge this information.

(b)   If the "Non-criminal Identifying Information" is relevant to the investigation, the member will have a sworn supervisor approve the "Inquiry Request Worksheet" prior to disseminating the information.

(3)   data which is not labeled as "Criminal Intelligence Information" or "Non-criminal Identifying Information," the member will make a determination:

(a)   If the information serves a legitimate law enforcement purpose, it may be disseminated.

(b)   If the information does not serve a legitimate lawful purpose, it will not be disseminated.

2.   Sworn supervisors reviewing an "Inquiry Request Worksheet" will:

   a.   determine if the "Need to Know/Right to Know" criteria has/have been satisfied.

   b.   ensure that a 28 CFR 23 notification is printed upon the hard copy report delivered to the agency representative.

   c.   ensure the agency representative has signed the "Inquiry Request Worksheet." A signed facsimile copy will suffice for phone inquiries.

   d.   forward the completed "Inquiry Request Worksheet" to PSIT.

3.   PSIT will forward one copy of the completed "Inquiry Request Worksheet" to the owner of the data.

VIII.   SELF-CONTAINED INFORMATION SYSTEMS

Any unit that maintains investigative records or criminal intelligence information on a system that is self-contained is **expressly prohibited from sharing any information contained on that system with any outside agency.**

IX.   RETENTION

A.   Information in the Department's computerized information systems will adhere to the Department's Form Retention Schedule and all applicable federal, state and local laws.

B.   Department members will not remove or alter any official record, file or report from the Department's computerized information systems, unless explicitly authorized.

C.   PSIT will preserve transaction logs in a manner consistent with operational functionality and in accordance with the Department's retention schedule and in compliance with all federal, state and local laws.

D.   The Owner of the Data labeled as Criminal Intelligence Information or Non-criminal Identifying Information will be responsible for reviewing on a periodic basis the validity of such information.

   1.   Inaccurate or outdated information should be deleted.

   2.   Whenever a member assigned/detailed to the Bureau of Detectives or the Bureau of Organized Crime determines that a suspect person or vehicle record is no longer appropriate the member will remove the Suspect Person/Suspect Vehicle card from the unit file, check the "Delete" box and enter his star number in the "Remarks" section of the card. The card will be submitted through the chain of command to the division chief for authorization of the records purge.

   3.   Additions to a record will be dated.

   4.   Modifications to a record which correct errors or negate an individual's classification as a suspect must be reported to any agency that received such erroneous information.

   5.   Owners of data will submit an annual report, through their respective chain of command, to the Chief, Bureau of Administration certifying that the records in the Department's computerized information systems have been verified.

E.   PSIT will purge Criminal Intelligence records no later than five years from the last validated entry.

X.   VIOLATIONS OF POLICY

A.   Alleged violations of this directive shall be investigated by means of the Complaint Register (CR) process and subject to disciplinary action.

B.   Violations of the regulations imposed by 28 CFR 23 are subject to monetary fines of $11,000.00 per violation.

(Items indicated by *italic/double* underline were added or revised)

Garry F. McCarthy
Superintendent of Police

12-008 (RJN) TRH

ISSUE DATE:	03 February 2012	EFFECTIVE DATE:	03 February 2012
RESCINDS:	02 December 2011version; G98-07-04A		
INDEX CATEGORY:	Information Management		

I. PURPOSE

This directive:

A. defines Department policy specific to acquiring, entering, accessing, disseminating and retaining data stored in the Department's computerized information systems.

B. delineates responsibilities for Department members when acquiring, entering, accessing, disseminating and purging data.

C. continues and expands established guidelines for the collection, storage, access, dissemination and retention of computerized information.

D. establishes policy and procedures for sharing computerized information with outside law enforcement agencies.

E. establishes mandates for compliance with Title 28 Code of Federal Regulations Part 23 (28 CFR 23) as it applies to Criminal Intelligence Information shared by the Department with outside law enforcement agencies.

II. POLICY

A. Information gathered by Department members will be obtained by lawful means in a manner consistent with Department policies, practices and procedures.

B. Entry of data into the Department's computerized information systems is restricted to authorized Department members.

C. Access to various classifications of information stored on the Department's computerized information systems will be restricted to those Department members authorized by Public Safety Information Technology (PSIT).

D. Information contained within the Department's computerized information systems will be disseminated in accordance with Department policy and in compliance with all federal, state and local laws.

E. Department members will not purge any information stored in the Department's computerized information systems, unless explicitly authorized.

F. Incidental sharing of information from the Department's computerized information systems or remote access by an outside law enforcement agency will conform to the policies and procedures outlined in this directive and will comply with 28 CFR 23.

III. GENERAL INFORMATION

A. In order to meet the information needs of its members, the Chicago Police Department utilizes a centralized management approach to the processing, handling, and analysis of computerized information.

B. Information made available on the Department's computerized information systems may originate from outside agencies. However, Criminal Intelligence Information shall only be entered into the Department's computerized information systems by Department members acting within their prescribed capacity and in accordance with this directive and applicable federal, state and local laws.

C. Computerized files on known active criminals will be used to advise members of information which could:

    1.   provide investigative leads.

    2.   provide a measure of officer safety.

    NOTE: **This information is, in and of itself, not authority to place an individual under arrest, nor is it cause for unreasonable restraint or search of the individual.**

D. The interface tools developed and/or used by the Department to access the computerized information systems are intended for the use of Department members lawfully engaged in the performance of their prescribed duties.

E. Computer-generated forms that replace CPD printed forms will use the same form number and initiation or revision date as the printed form. All required information in the original CPD printed form will also be required in the computerized version. Information fields not contained in the original printed form will not be added to the computerized version. No CPD form will be made available for use on the Department's computerized information systems without the Information Systems Development Group approval.

F. Members creating forms/reports that are computer-generated will create a footer at the lower left hand corner of each page stating: "computer generated form" and place the appropriate CPD form number and initiation or revision date next to it.

IV. COLLECTION AND ENTRY OF INFORMATION

A. Department members will collect information in a lawful manner and in compliance with Department directives and applicable federal, state and local laws.

B. Prior to submission for entry into the Department's computerized information systems, Department members making a submission will verify the information contained in the entry.

C. Members assigned to enter data will be responsible for accurately entering the data according to the prescribed guidelines.

D. Data entered into the Department's computer information systems is subject to the same level of supervisory review as is currently in place for reports submitted on formsets. Information will be attributed to the submitting officer(s).

E. *Department members will not retain information about any individual or organization gathered solely on the basis of religious, political, or social views or activities; participation in a particular noncriminal organization or lawful event; or race, ethnicity, citizenship, place of origin, age, disability, gender, or sexual orientation. The investigation and related documentation must comply with the Department directives entitled* **"The First Amendment and Police Actions"** *and* **"Information Report System"** *and all associated addenda.*

    NOTE: This prohibition does not apply when the individual or entity is not the subject of an investigation and the reference is Non-criminal Identifying Information tied to an existing criminal report or subject record. Retrieval and use of such information, especially when taken out of context, will be clearly labeled as Non-criminal Identifying Information.

F. Whenever a member assigned/detailed to the Bureau of Detectives or the Bureau of Organized Crime identifies an individual as an active criminal and seeks to enter such information into a criminal intelligence database, the member will:

    1.   verify that the individual has been assigned an IR, SID and/or FBI number.

    2.   prepare a Suspect Person/Suspect Vehicle card (CPD-11.460).

    3.   ensure that the data is current and accurate.

4.   forward completed Suspect Person/Suspect Vehicle cards to the division chief.

G.   The Chief, Bureau of Detectives and the Chief, Organized Crime will:

1.   review submitted Suspect Person/Suspect Vehicle cards for conformance to required criteria.

2.   ensure only those submissions meeting the established criteria are forwarded to be entered into the Department's computerized information systems.

   a.   After entry into the Department's computerized information systems, the Suspect Person/Suspect Vehicle card will be returned to the originating unit.

   b.   Unit files will be maintained in accordance with the forms retention schedule.

3.   conduct periodic audits with unit commanders, as outlined in Item IX entitled "Retention."

4.   authorize the purging of records as appropriate.

V.   STORAGE AND SECURITY

A.   Public Safety Information Technology (PSIT) is charged with the responsibility of computerized information systems storage and security issues as delineated in the Department directive entitled "**Computerized Information Systems**."

B.   Department members have no expectation of privacy in the use of Department computers or related equipment. Individuals may be subject to monitoring while using any of the Department's computers or accessing the computerized information systems.

C.   Each Department member will be issued a Logon ID and will be responsible for its security and accountable for its use. Members will not use another member's logon ID under any circumstances. All access including, but not limited to, Local Area Networks (LANs), Wide Area Networks (WANs), information system interfaces, entry terminals and administration terminals requires an authorized log-on and password.

D.   Department computerized information systems are designed with transaction logs for the purpose of establishing audit trails and back-up sets.

E.   Periodic audits for 28 CFR 23 compliance will be conducted to monitor Criminal Intelligence Information access and usage.

1.   PSIT will establish procedures to conduct audits of electronic submissions.

2.   The Inspection Division will establish procedures to conduct periodic audits of "Inquiry Request Worksheets" (CPD-11.704).

VI.   ACCESS TO COMPUTERIZED INFORMATION

A.   Use by Department Members

1.   Access to information or files maintained in the Department's computerized information system is granted only when authorized and by means of the log-on process on Department owned/leased equipment through authorized networking protocols and procedures.

2.   Any member who accesses information through the Department's computerized information systems is accountable for the appropriate use and disposal of the information. Access to information is restricted to official police business. Access of information for personal or other reasons is strictly prohibited.

3.   Department personnel are required to clear all open fields and **log-off** from the access device when they have completed the task(s) that required them to access the system.

4.   Access to Department computerized information systems is restricted by the following design features:

   a.   Logon IDs assigned for the appropriate approved level of access.

   b.   Limited access to information based upon the classification of the information and the authorization of the member accessing the system.

c.   Labeling of information, both on screen and in printed form, based upon its level of sensitivity and its classification as either Criminal Intelligence Information or Non-criminal Identifying Information.

    d.   daily purges of invalidated Logon IDs.

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The Chicago Police Department may enter into agreements with outside agencies to provide limited remote access to its computerized information systems. Remote access to the Department's computerized information systems will only be permitted after compliance with all of the following:

1.   the Superintendent of Police has given written preliminary approval, and

2.   the requesting agency head has submitted, for the approval of the Superintendent, an interagency agreement. The interagency agreement will contain the following provisions:

    a.   a description of the interface tool(s) and access methods to be employed.

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        (1)   ensure secure access points,

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        (7)   train personnel having access to the Department's computerized information systems on 28 CFR 23 compliance issues.

3.   the requesting agency has furnished a copy of their 28 CFR 23 policy.

4.   execution of the agreement by the Superintendent of Police.

5.   the interagency agreement and appropriate documentation have been forwarded to the Office of Justice Programs and been approved.

6.   the Department has notified the grantor of any funding relating to the project.

7.   approval of the Office of Justice Programs; the Department may initiate remote access capability to the requesting agency when:

    a.   the Department has trained designated members of the outside agency in the proper use of the interface tool(s) and issues involving 28 CFR 23 compliance, and

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    3.   Additions to a record will be dated.

    4.   Modifications to a record which correct errors or negate an individual's classification as a suspect must be reported to any agency that received such erroneous information.

    5.   Owners of data will submit an annual report, through their respective chain of command, to the Chief, Bureau of Administration certifying that the records in the Department's computerized information systems have been verified.

E.   PSIT will purge Criminal Intelligence records no later than five years from the last validated entry.

X.   VIOLATIONS OF POLICY

A.   Alleged violations of this directive shall be investigated by means of the Complaint Register (CR) process and subject to disciplinary action.

B.   Violations of the regulations imposed by 28 CFR 23 are subject to monetary fines of $11,000.00 per violation.

(Items indicated by *italic/double* underline were added or revised)

Garry F. McCarthy
Superintendent of Police

12-008 (RJN) TRH

SUBCONTRACT SERVICES AGREEMENT

Motorola Solutions, Inc.. as prime contractor ("Prime Contractor" or "Motorola"), and Dataworks Plus LLC, as subcontractor ("Subcontractor" or "Supplier"), enter into this Subcontract Services Agreement ("Subcontract" or "Agreement") effective March 21, 2013 ("Effective Date") pursuant to which Prime Contractor will purchase and Subcontractor will furnish the services more fully described below for Prime Contractor's fulfillment of its System Integration and Services Agreement between the Public Building and Commission of Chicago ("Customer") and Motorola, Inc. (now known as Motorola Solutions, Inc.) Contract No. PS1836 ("Prime Contract"). Prime Contractor and Subcontractor may be referred to individually as a "Party" and collectively as the "Parties."

1 SERVICES

Subcontractor will provide services to Motorola under this Agreement in support of Motorola's Prime Contract with the Customer ("Services"). This Agreement does not limit Motorola's right to perform, or to select others to perform, the same or similar services. Subcontractor acknowledges and agrees to furnish Services in accordance with all of the following the terms and conditions:

(a) Each and every provision of the Prime Contract. attached hereto as Exhibit A and incorporated herein by reference, which flows down to Subcontractor as it relates to the Services performed by Subcontractor on behalf of Motorola pursuant to the Agreement.

(b) Customer Construction Terms and Conditions attached hereto as Exhibit B and incorporated herein by reference.

(c) Additional Services Procurement Terms and Conditions set forth on Exhibit C attached hereto and incorporated herein by reference.

(d) Individual Task Order(s) which set forth the detailed description of Services to be provided by Subcontractor which when signed by the Parties is deemed incorporated herein and made a part of this Agreement. A form Task Order is attached hereto as Exhibit D.

To the extent there is a conflict in the terms and conditions contained in the Exhibits or Task Order, the order of priority as to the inconsistency only (from highest to lowest) shall be 1) Exhibit C (Additional Services Procurement Terms and Conditions), 2) Exhibit A (Prime Contract), 3) Exhibit B (Customer Construction Terms and Conditions) and 4) signed Task Order.

2 TERM

The term of this Agreement shall begin as of the Effective Date and continue until terminated as set forth herein.

3 ENTIRE AGREEMENT

This Agreement, including any attached Exhibits and Appendices, is the entire understanding between the parties concerning the subject matter hereof and supersedes all prior discussions,

agreements and representations, whether oral or written, express or implied. No alterations or modifications of this Agreement will be binding upon either party unless made in writing and signed by an authorized representative of each party.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives on the dates written under their signatures below intending for this Agreement to become effective as of the Effective Date

MOTOROLA SOLUTIONS, INC.

By: ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

Name: ▮▮▮▮▮▮▮▮▮▮

Title: ▮▮▮▮▮▮▮▮▮▮

Date: 3/26/13

Dataworks, Plus, LLC

By: ▮▮▮▮▮▮▮▮▮▮▮▮

Name: ▮▮▮▮▮▮

Title: ▮▮▮▮▮

Date: March 21, 2013

Exhibit A

Prime Contract and Required Flow-Down Provisions

In accordance with the requirements of the Prime Contract, each and every provision of the Prime Contract, attached to this Exhibit A and Incorporated herein by reference, flows down to Subcontractor as it relates to the Services performed by Subcontractor on behalf of Motorola pursuant to this Agreement.

For purposes of this Exhibit A, all references under the Prime Contract to "Consultant" shall mean Subcontractor and references to "Commission" shall mean "Motorola".

Exhibit B

Customer Construction Terms and Conditions

The Services Subcontractor will provide under this Agreement do not include constructions services and therefore this Exhibit B is intentionally omitted.

Exhibit C

Additional Services Procurement Terms and Conditions

Subcontractor agrees to the following Additional Services Procurement Terms and Conditions in conjunction with performing Services under this Agreement.

1 SERVICES AND SOFTWARE

1.1 Subcontractor will provide Services to Motorola under this Agreement in support of Motorola's Prime Contract with the Customer. A detailed description of the Services, including duties responsibilities and obligations, is set forth in a Task Order which when signed will become part of this Agreement.

1.2 As part of said Services, Subcontractor is willing to grant Motorola a non-exclusive right to distribute and sublicense the Dataworks Plus, LLC Photomanager Facial Recognition_software ("Licensed Product") in or with Motorola's own products or as standalone Licensed Products in accordance with Exhibit C-1; a copy of which is attached hereto and incorporated herein by reference.

2 INVOICING AND PAYMENT

2.1 Subcontractor will present invoices upon delivery of Services, milestones or Licensed Products in accordance with the amounts specified in the applicable Task Order. Motorola will pay the amount of each accurate invoice within seventy-five (75) days after the date of Motorola's acceptance of Services and receipt of and invoice. The invoice will indicate a breakdown and distribution of charges by Services performed and applicable expenses. Travel time will not be compensable time unless otherwise pre-approved by Motorola in writing. Payment for all or part of the Services will not constitute acceptance.

2.2 Subcontractor agrees to submit electronic invoices in accordance with Motorola's electronic invoice and payment process, more fully described at www.ob10.com/motorola. Subcontractor will also send invoices, supporting documentation and receipts to the individual designated at the address specified in the Task Order.

2.3 Subcontractor shall at all times promptly pay for all services, materials, equipment and labor used or furnished by Subcontractor in the performance of the services under this Agreement and shall, to the fullest extent allowed by law, at its expense, keep the service sites and all property belonging to Prime Contractor and Prime Contractor's customers, free and clear of any and all liens and claims of lien arising out of services, labor, equipment or materials furnished by Subcontractor or its employees, materialmen or Second Tier Subcontractors in the performance of the services. Subcontractor agrees to include a waiver of any and all liens when submitting invoices to Prime Contractor for payment. If Subcontractor fails to release and discharge any lien or threatened lien against the service sites arising out of performance of the services within thirty (30) working days after receipt of written notice from Prime Contractor to remove such lien or claim of lien, Prime Contractor may, at its option, discharge or release the lien or claim of lien or otherwise deal with the lien claimant, and Subcontractor shall pay Prime Contractor any and all costs and expenses of Prime Contractor in so doing, including reasonable attorneys' fees incurred by Prime Contractor.

2.4 Motorola may set off any amount owed by Motorola to Subcontractor against any amount owed by Subcontractor to Motorola.

3 TERMINATION

3.1   Either party may terminate this Agreement if the other party breaches a material obligation under this Agreement, and that breach continues uncured for a period of thirty (30) days after the breaching party receives written notice of the breach from the other party.

3.2   Motorola may terminate this Agreement, Task Order, or all or any portion of Services performed hereunder, for convenience upon written notice to Subcontractor.

3.3   Termination of this Agreement, Task Order, or all or any portion of Services performed hereunder, will not limit either party from pursuing any other remedies available to it, including injunctive relief, nor will termination relieve Subcontractor of its obligation to pay all charges, including expenses, that accrued prior to such termination. Subcontractor will use commercially reasonable efforts to avoid, cancel or minimize any such charges. All rights and obligations that by their nature are intended to survive will survive termination of this Agreement.

3.4   Upon termination and pursuant to this Section 3, Subcontractor will immediately stop performing Services unless directed otherwise by Motorola. Subcontractor will invoice Motorola for any outstanding sums that are owed for work completed and accepted by Motorola prior to the date of the termination notice. As to work in progress, Subcontractor is entitled to recover its reasonable and documented costs and expenses incurred in the performance of the Services prior to the date of the termination notice. Subcontractor will provide sufficient written documentation of such costs and expenses. Subcontractor will deliver to Motorola any tangible item, including but not limited to reports, drawings, sketches, formulas, designs, analyses, graphs and notes; and any Intellectual Property in tangible form, which is owned by Motorola under the terms of this Agreement. If this Agreement expires or terminates before the Services have been completed, Motorola may complete the Services or may arrange for completion of the Services by a third party. In the event Subcontractor does not agree to arrangements for the completion of said Services, Subcontractor grants to Motorola all rights and licenses, and the authority to grant all rights and licenses, necessary to complete the Services.

4 WARRANTIES

Subcontractor warrants that it has the authority and right to grant Motorola all the rights set forth in this Agreement. Subcontractor warrants that it has authored or created the Services (including any software provided to Motorola), or has acquired the right for Motorola to use the Services, including any methodology furnished under this Agreement, and that it has not infringed copyrights or other Intellectual Property Rights of third parties in furnishing such licensing or Services. Subcontractor has no knowledge of any third party patent rights, trademark rights, or other Intellectual Property Rights that would be infringed by the manufacture, use, or sale of any Services (including any software provided to Motorola) or by any other act contemplated by this Agreement.

5 ACCEPTANCE OF SERVICES

If Subcontractor's Services are defective or non-conforming, or Subcontractor fails to timely perform, Subcontractor will promptly, upon Motorola's request: (i) re-perform the defective or nonconforming Services until such breach is cured and will be responsible for all costs associated with such re-performance, or at Motorola's option, issue a refund, (ii) expedite late performance; and (iii) pay all additional costs incurred by Motorola and its customers for charges and damages incurred and paid by Motorola.

6 CONFIDENTIAL INFORMATION AND ACCESS TO MOTOROLA COMPUTER RESOURCES.

6.1   For purposes of this Agreement, "Confidential Information" means confidential or proprietary data, materials, or information disclosed by one party to the other under this Agreement: (i) in written, graphic, machine recognizable, electronic, sample, or any other tangible or visually perceptible form, which is clearly designated as "confidential" or "proprietary" at the time of disclosure; and (ii) in oral form, if it is identified as confidential at the time of disclosure, and confirmed in a written summary designated as "confidential" or "proprietary" within thirty (30) days after disclosure

6.2   During the term of this Agreement and for three (3) years following expiration or termination, or longer period as specified in a Task Order, the receiving party will: (i) not disclose Confidential Information to any third party; (ii) restrict disclosure of Confidential Information to only those employees, agents or consultants who must be directly involved with the Confidential Information for purposes of this Agreement and who are bound by confidentiality terms substantially similar to those in this Agreement; (iii) not reverse engineer, de-compile or disassemble any Confidential Information; (iv) use the same degree of care as for its own information of like importance, but at least use reasonable care, in safeguarding against disclosure of Confidential Information; and (v) promptly notify the disclosing party upon discovery of any unauthorized use or disclosure of the Confidential Information and take reasonable steps to regain possession of the Confidential Information and prevent further unauthorized actions or other breach of this Agreement.

6.3   The receiving party is not obligated to maintain as confidential, Confidential Information that the receiving party can demonstrate by documentation: (i) is now available or becomes available to the public without breach of this Agreement; (ii) is explicitly approved for release by written authorization of the disclosing party; (iii) is lawfully obtained from a third party or parties without a duty of confidentiality; (iv) is known to the receiving party prior to such disclosure; or (v) is independently developed by the receiving party without the unlawful use of any of the disclosing party's Confidential Information or any breach of this Agreement.

6.4   If a receiving party is required to disclose Confidential Information pursuant to applicable law, statute, or regulation, or court order, the receiving party will give to the disclosing party prompt written notice of the request and a reasonable opportunity to object to such disclosure and seek a protective order or appropriate remedy. If, in the absence of a protective order, the receiving party determines, upon the advice of counsel, that it is required to disclose such information, it may disclose only Confidential Information specifically required and only to the extent compelled to do so.

6.5   Each party will keep confidential the existence and terms of this Agreement and that the parties are meeting or exchanging Confidential Information. Each person performing Services for Motorola on Subcontractor's behalf will agree in writing to the confidentiality obligations contained in this Agreement.

6.6   All Confidential Information remains the property of the disclosing party and will not be copied or reproduced without the express written permission of the disclosing party, except for copies that are absolutely necessary in order to fulfill the confidentiality obligations contained in this Agreement. Within ten (10) days of receipt of the disclosing party's written request, the receiving party will return all Confidential Information to the disclosing party along with all copies and portions thereof, or certify in writing that all such Confidential Information has been destroyed. However, the receiving party may retain one (1) archival copy of the Confidential Information that it may use only in case of a dispute concerning this Agreement. No

license, express or implied, in the Confidential Information is granted other than to use the Confidential Information in the manner and to the extent authorized by this Agreement. The disclosing party warrants that it is authorized to disclose any Confidential Information it discloses pursuant to this Agreement. However, the disclosing party makes no other representation or warranty of any kind with respect to the Confidential Information.

6.7   The receiving party's obligations regarding Confidential Information as stated in this Section 6 will survive the expiration or termination of this Agreement.

7   SUBCONTRACTING

Subcontractor will not subcontract any of its obligations under this Agreement without Motorola's prior written consent. Subcontractor retains responsibility for all obligations subcontracted hereunder and will indemnify Motorola against any liability caused by the acts or omissions of Subcontractor's subcontractors.

8   NOTICES

All notices and other required communications will be in writing, in the English language and will be transmitted to the addresses shown below (or any updated addresses provided in writing) either by: (i) personal delivery; (ii) expedited delivery service; (iii) registered or certified mail, postage prepaid and return receipt requested; or (iv) electronic facsimile with confirmed receipt. Notices under this Section will be effective and deemed given as of the day received or at such time as delivery is refused by addressee upon presentation.

Motorola will send notices to Subcontractor as follows:

Dataworks Plus, LLC
728 North Pleasantburg Drive
Greenville SC 29607
Attention: █████████
Facsimile: █████████

Subcontractor will send notices to Motorola as follows:

Chief Procurement Officer
Motorola Solutions, Inc.
1301 East Algonquin Road
Schaumburg, IL 61096
Facsimile: 1-847-576-2368

With a copy to:

Motorola Law Department
Motorola Solutions, Inc.
1303 East Algonquin Road
Schaumburg, IL 61096
Facsimile: 1-847-576-4088

8   THIRD PARTY BENEFICIARY

Subcontractor acknowledges and agrees and said Services are for the benefit of Customer, who is a third party beneficiary with the rights to enforce any of the terms and conditions of this Agreement, including the standards of performance, indemnity and insurance.

Exhibit C-1

Licensed Product Terms and Conditions

1. Definitions. When used in this Exhibit C-1, capitalized terms have the meanings set forth in this section or elsewhere in this Agreement.

   1.1 "End User License Agreement" or "EULA" means an agreement between Motorola and End User governing use of the Motorola Product.

   1.2 "End User" means the entity or individual that, under sublicense from Motorola, acquires the right to use the Motorola Product for its own use and not for redistribution or resale to others.

   1.3 "Licensed Product" means the Supplier product(s) identified as Dataworks Plus Photomanager Facial Recognition Software as Licensed Product or software licensed or otherwise provided to Motorola for use by Motorola or its' End User customer. Licensed Product also includes any associated documentation, user guides, compilation instructions, documents, manuals or other files regarding the installation, use, operations, functionality, troubleshooting and other technical information sufficient to use the Licensed Product.

   1.4 "Motorola Product" means the product(s) manufactured by or for Motorola or with which the Licensed Product will be embedded or bundled.

   1.5 "Object Code Form" means the machine-readable form of software code that is not convenient to human understanding but is appropriate for execution or interpretation by a computer.

   1.6 "Open Source Software" or "OSS" means software that is publicly distributed as free software and licensed to Supplier pursuant to terms that directly or indirectly: (i) create, or purport to create, obligations for an author with respect to the software or derivative work thereof; or (ii) grant, or purport to grant, to any third party any rights or immunities under any of the author's Intellectual Property Rights in the software or derivative works thereof. OSS may include software that requires (as a condition of use, modification, or distribution) that any software incorporated into, derived from, or distributed with such software be: (i) disclosed or distributed in Source Code form; (ii) licensed for the purpose of making derivative works; or (iii) redistributable at a nominal charge.

   1.7 "Schedule(s)" means the attachments to this Exhibit C-1 as follows:

   Schedule 1 – Supplier-EULA
   Schedule 2 – Support Services

   1.8 "Supplier" means the licensor of the Licensed Product being licensed to Motorola hereunder.

2. LICENSE GRANTS. Subject to the terms and conditions contained herein, Supplier grants Motorola a non-exclusive, non-transferable, non-assignable, limited, right and license Term of this Agreement and subject to its provisions, terms and conditions, as follows:

   2.1 Reproduction and Integration. Motorola may reproduce the Licensed Products from master copies.

   2.2 Distribution. Motorola may sublicense, and distribute Licensed Product in Object Code Form only subject to the requirements of this Agreement as integrated or bundled with Motorola Product or as a standalone application: (i) directly to End Users for use under sublicense from Motorola; or (ii) through Motorola resellers or distributors, to whom Motorola may grant only the right to distribute (without the further right to sublicense) the Licensed Products and related documentation to End Users for use under sublicense from Motorola as part of Motorola Product. To the extent Source Code, documentation and/or End User editable files are included with Object Code licensed hereunder, Motorola and End User shall have the right to distribute, edit and make derivative works to said Source Code documentation and/or End User editable files. To the extent additional terms are required for specific Motorola customers, the parties may enter into one or more mutually agreed upon amendments to specify flow down terms specific to Motorola customers utilizing Licensed Product(s).

3. SUBLICENSE AGREEMENTS.

3.1 End User License Agreements. Motorola agrees to sublicense the Licensed Products to End Users by means of terms and conditions which are at least as restrictive as the Supplier-EULA required by this section. The rights granted in the EULA must be limited to perpetual use rights in object code form only. The EULA must include provisions that are at least as restrictive regarding use of the Licensed Product, and at least as protective regarding Supplier's intellectual property rights, as the provisions in Supplier's standard software and user license agreement ('Supplier-EULA') attached hereto as Schedule 1 to Exhibit C-1. Notwithstanding the Supplier-EULA, all rights granted End Users are perpetual and will survive termination, expiration, or alteration of this Agreement.

3.2 Conflicts. In the event of a conflict between the license grants and indemnification obligations of this Agreement and the corresponding sections of the Supplier-EULA, the terms of this Agreement shall control. In the event of any other conflict between this Agreement and the Supplier-EULA, the terms of this Agreement shall control as to Motorola. In the event of any other conflict between this Agreement and the Supplier-EULA, the terms of the Supplier-EULA shall control as to the End User.

3.3 OSS. Supplier will disclose the existence, architecture, intended use and license terms of any OSS in any deliverable. The terms and conditions governing the use of such OSS will be those set forth in the applicable OSS license. If there is a conflict between the terms and conditions of this Agreement and the terms and conditions of the OSS license that governs Motorola's use of such OSS, the license grant to the applicable OSS license will take precedence over the license grant herein. Nothing in this Agreement restricts Motorola's rights under the term and conditions of any OSS license.

4. OWNERSHIP OF LICENSED PRODUCT.

4.1 Licensed Product. Except for the specific rights and licenses granted herein, Supplier retains all right, title and interest in the Licensed Product and in all modifications and derivative works thereof. Supplier will have sole ownership of and any right, title and interest to all Intellectual Property Rights developed by Supplier prior to or outside the scope of this Agreement and any improvements made by Supplier to Supplier's Intellectual Property Rights, including but not limited to, patent rights, inventions, discoveries, trade secrets, copyrights, trademarks and mask works. Motorola will have sole ownership of and all right, title and interest to all Intellectual Property Rights developed by Motorola prior to or outside the scope of this Agreement and any improvements made by Motorola to Motorola's Intellectual Property Rights, including but not limited to, patent rights, inventions, discoveries, trade secrets, copyrights, trademarks and mask works.

4.2 Neither party will acquire any right, title, or interest, including any license (implied or otherwise) by virtue of its performance under this Agreement, in the Intellectual Property Rights of the other party except as expressly granted herein.

5. SUPPORT SERVICES.

Supplier will provide Motorola technical support services as described in Schedule 2 to Exhibit C-1, a copy of which is attached hereto and incorporated herein by reference. End Users may enroll in Maintenance and Support services from Supplier through Motorola. Services will be performed in a professional manner, consistent with generally accepted industry standards and in accordance with Supplier's published or other written specifications and descriptions. Unless otherwise agreed by the parties, Motorola shall provide 'Tier 1' support to Motorola End Users and Supplier shall support Motorola. Supplier agrees to provide support to End Users for issues for which Motorola us unable to resolve. The parties may enter into one or more mutually agreed upon Statements of Work ("SOW") to describe deliverables or detailed services to be performed under this Agreement. Any SOW shall specify tasks, deliverables, milestones, timelines, schedules and responsibilities.

DATAWORKS PLUS
END USER SOFTWARE LICENSE & AUTHORIZATION (EUSLA)

Section 1
SALE AND LICENSE

1.0 License of Programs. Effective upon completion of delivery, installation and payment in full of the software program (the "Software") described in the proposal, sales contract and purchase order, DataWorks Plus grants to Customer: (1) a nonexclusive license to use the applications software owned by DataWorks Plus (the "DataWorks Plus Programs") identified in the contract; and (2) a nonexclusive license to install and use solely within the customers own agency. The Software is authorized to be installed, executed, and used in machine-readable form only by employees, members, staff and individuals directly associated with the customer. DataWorks Plus reserves all rights to sell, transfer, trade, license, sublicense and otherwise dispose of the software.

Customer's rights in the Programs pursuant to the granted license are expressly limited to the use by Customer at the Customers Installation Site. Customer shall not assign, transfer, sell, or sublicense the DataWorks Plus provided Software without the prior written consent of DataWorks Plus.

Section 2
DELIVERY

2.0 Delivery of Software. Customer, will receive from DataWorks Plus compact disc (CD) based copies of the machine readable Software at the expense of DataWorks Plus in addition to Software that may be installed or integrated by DataWorks Plus as part of the Contract. Customer shall assure the security of the Software and prior to delivery shall provide DataWorks Plus the Customer's address and name of the responsible individual to receive the Software Application.

Delivery of the Software, if separate of the contracted system shall generally occur within ten days (10) of receipt of payment and initiated by DataWorks Plus. At Customer's written request, if required under the terms of the contract, source code shall be escrowed within sixty days 60 of receipt of final contract payment.

Section 3
PROPRIETARY PROTECTION OF PROGRAMS

3.0 Reservation of Title. The DataWorks Plus Software and all materials furnished or produced in connection them ("Related Materials") may contain trade secrets of DataWorks Plus and are for use only in the manner expressly permitted under this Agreement. DataWorks Plus claims and reserves all rights and benefits afforded under federal law in the DataWorks Plus Programs as copyrighted works.

3.1 Preservation of Secrecy and Confidentiality; Restrictions on Access. Customer shall protect the DataWorks Plus Programs and Related Materials as trade secrets of DataWorks Plus, and shall devote its best efforts to ensure that all its personnel protect the DataWorks Plus Programs as trade secrets of DataWorks Plus. Customer shall not at any time disclose DataWorks Plus's trade secrets to any other person, firm, organization, or employee that does not need (consistent with Customer's right of use hereunder) to obtain access to the DataWorks Plus Programs and Related Materials. These restrictions shall not apply to information (1) generally known to the public or obtainable from public sources; (2) readily apparent from the keyboard operations, visual display, or output reports of the Programs, (3) previously in the possession of Customer or subsequently developed or acquired without reliance on the DataWorks Plus Programs; or (4) approved by DataWorks Plus for release without restriction.

3.2 Restrictions on Use of Programs Generally. The Programs and Related Materials may not be copied, reprinted, reverse engineered, transcribed, or reproduced, in whole or in part, without the prior written consent of DataWorks Plus. Customer shall not in any way modify or enhance the Programs or Related Materials without the prior written consent of DataWorks Plus.

3.3 Duration of Duties and Return of Programs. The duties and obligations of Customer under this agreement shall remain in full force and effect for so long as Customer continues to control, possess, or use the Programs. Customer shall promptly return the Programs together with all Related Materials, upon (1) termination for any reason of this Agreement and Customer's license of the Programs or (2) abandonment or other termination of Customer's control, possession, or use of the Programs.

3.4 User Material and Manuals

DataWorks Plus may furnish Customer with materials, including user manuals, relating to the use and administration. DataWorks Plus reserves all right, title, and interest in any such materials, including associated intellectual property rights, and Customer shall return the materials to DataWorks Plus in accordance with 3.3 above.

3.5 Licensed Locations & User's

Software may be installed on computers that are specified and described in the contract or as further defined in this

EUSLA Customer may copy, backup and distribute the software in accordance with the contract and this license. In the absence of specific limitations the Customer may make a single copy for each concurrent user licenses purchased and a single backup copy for each central processor and backup processor.

DataWorks Plus may request, and the Customer will within five (5) days of such
request provide, all customer's user names, locations, agency affiliation and other particulars to aid DataWorks Plus in establishing adherence to licensing rights.

Section 4
WARRANTIES AND LIMITATIONS

4.1 Limited Warranty and Disclaimer
4.1.1 Equipment, Operating Programs and Application Software Warranty. DataWorks Plus warrants, for the benefit of Customer only, that at the time of completion of delivery and installation the Application Software shall conform in all material respects to the specifications supplied in writing by DataWorks Plus and shall be free of defects and such warranty shall continue for a twelve month period following installation. Warranty and ongoing maintenance does not cover virus protection and system failure caused by viruses. Customer will be responsible for any and all damage caused by the introduction of foreign code that destroys or affects the Software or system running the Software.

4.1.2 Exclusive Remedy. As Customer's exclusive remedy for any nonconformity or defect in the Software, DataWorks Plus shall, during the twelve (12) month period following the completion of delivery and installation of the Software at Customer's address, provide all reasonable efforts to correct or cure such nonconformity or defect. For DataWorks Plus service beyond the expiration of the warranty period, Customer must enter into a maintenance and support agreement with DataWorks Plus.

4.1.3 Conditions Precedent. DataWorks Plus shall bear no responsibility for correcting or otherwise remedying any nonconformity or defect with respect to the condition or operation of the Software if (1) the Software is not maintained and operated under normal conditions by qualified personnel; (2) the Software incorporates or cohabitates with other application software or operating system other than those purchased under this Agreement; (3) the Software has been altered, abused; (4) the nonconformity or defect has not been reported to DataWorks Plus prior to the expiration of the specified twelve (12) month warranty period; or (5) the nonconformity or defect has arisen as a result of the fault or negligence of parties other than DataWorks Plus.

4.1.5 Disclaimer. With the sole exception of the items specified above in this Section, DATAWORKS PLUS DISCLAIMS ANY AND ALL PROMISES, REPRESENTATIONS, AND WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE DATAWORKS PLUS SOFTWARE PROGRAMS) INCLUDING ITS CONDITION, THE EXISTENCE OF ANY LATENT OR PATENT DEFECTS, AND ITS MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE. DATAWORKS PLUS FURTHER DISCLAIMS ANY AND ALL PROMISES, REPRESENTATIONS, AND WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE NATURE AND QUALITY OF ANY OTHER PERFORMANCE BY DATAWORKS PLUS HEREUNDER.

4.2 Limitation of Liability. DATAWORKS PLUS SHALL NOT BE LIABLE FOR ANY COMMERCIAL LOSSES, LOSS OF REVENUES OR PROFITS, LOSS OF GOOD WILL, INCONVENIENCE, OR EXEMPLARY, SPECIAL, INCIDENTAL, INDIRECT, CONSEQENTIAL OR PUNITIVE DAMAGES WHATSOEVER, OR CLAIMS OF THIRD PARTIES, REGARDLESS OF THE FORM OF ANY CLAIM, WHETHER IN CONTRACT OR TORT, WHETHER FROM BREACH OF THIS AGREMENT, OR DEFECTIVE SOFTWARE, OR LOSS OF DATA OR FROM ANY OTHER USE, EVEN IF DATAWORKS PLUS HAS BEEN ADVISED OR SHOULD BE AWARE OF THE POSSIBILITY OF SUCH DAMAGE. DATAWORKS PLUS'S LIABILITY FOR LOSS OR DAMAGES SHALL NOT EXCEED FIFTY PERCENT (50%) OF THE PURCHASE PRICE PAID.

Section 5
WAIVER AND RIGHTS

5.0 Waiver. Failure of either party in exercising any right under this agreement, nor any partial exercise thereof, shall not be deemed to constitute a waiver of any rights granted hereunder or at law The presence or absence of an Event of
Default shall in no way prejudice or abridge the right of DataWorks Plus to seek and obtain in appropriate circumstances stoppage of use of software or reclamation of software after delivery.

Section 6
GENERAL

6.0 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of South Carolina.

6.1 Entire Agreement; Amendments. These License Terms and the referenced sales agreement or purchase order constitute the entire Agreement between the parties with respect to the subject matter of this agreement and supersedes any and all prior and contemporaneous representations, agreements, negotiations, advertisements, statements, or understandings, whether oral or written. No amendment to this Agreement shall be binding on either party unless such amendment is in writing and executed by authorized representatives of both parties to this Agreement.

6.0 Notice. Any notices required or permitted under this Agreement shall be in writing and shall be effective when delivered in person or sent by registered or certified mail, return receipt requested, with proper postage affixed, or by personal courier to the address set forth in this Agreement or any more recent address of which the sending party has been apprised.

Schedule 2 to Exhibit C-2

Support Services

The Support Services to be provided under this Agreement is set forth in the SOW signed by the parties under this Agreement.

TASK ORDER AND STATEMENT OF WORK
For
Services to be performed by

_____

For the
Chicago Public Building Commission ("Customer"
OEMC Camera Infrastructure Project ("Project")

This Task Order and Statement of Work ("SOW") is being entered into on _____ ("Effective Date") between Motorola Solutions, Inc. ("Motorola") and _____ ("Subcontractor") pursuant to the Subcontractor Services Agreement dated _____ ("Agreement"), the terms of which is incorporated herein by reference. All capitalized terms not otherwise defined herein shall be the same meaning as defined in the Agreement. Subcontractor agrees that it will not provide services or incur any costs under this SOW until it receives a purchase order from Motorola.

1. SCOPE
The scope of services to be provided by Subcontractor pursuant to this SOW is described below.

2. PROJECT SCHEDULE
Subcontractor agrees to perform Services under this SOW commencing on the Start Date and agrees to complete all tasks required no later than the Completion Date. Any extension or modification of this time period will require the written approval of Motorola. The Motorola Point of Contact for the project is _____, Project Manager, phone: _____, email: _____   _____

Start Date:

Completion Date: _____

3. SUBCONTRACTOR RESPONSIBILITIES AND MOTOROLA ACCEPTANCE
Subcontractor will perform the tasks and provide the deliverables as described below. Motorola will accept the services and deliverables as described below.

Include tasks, deliverables and acceptance criteria. The table below is provided as an example. Note: Deliverables are not the work itself but rather evidence that the Subcontractor has performed the work. Deliverables could be a consulting report, programming code, a newly completed course, a project plan, a high level design document, etc. All Deliverables need some sort of Acceptance Criteria from Motorola.

Include any assumptions or Motorola responsibilities. Also indicate Motorola provided equipment or Subcontractor provided equipment.

TASK	DELIVERABLE	ACCEPTANCE CRITERIA	COMPLETION DATE	KEY MILESTONES

4. COMPENSATION

Subcontractor will present invoices upon Motorola's acceptance of the deliverables as follows.

[[NOTE: If this SOW is over $250,000, you are required to coordinate review and signature with Procurement PRIOR to sending out for supplier signature. See http://compass.mot-solutions.com/go/sipamericas to identify who your Procurement Manager is]

[Include deliverables and payments to be made to Subcontractor

Subcontractor agrees to submit electronic invoices in accordance with Motorola's electronic invoice and payment process, more fully described at www.ob10.com/motorola. Subcontractor will send all invoices, supporting documentation and receipts to the individual designated at the address specified above. Motorola will pay the amount of each accurate invoice in accordance with the terms of the Agreement.

5. ADDITIONAL TERMS AND FLOW DOWN TERMS AND CONDITIONS

Are prevailing wages applicable under this SOW? Include additional terms applicable to the services. Include any required flow down terms and conditions from a prime contract or note here if there are no additional terms and conditions.

IN WITNESS WHEREOF, the parties hereto have caused this SOW to be executed by their duly authorized representatives as of the Effective Date of this SOW.

Motorola Solutions, Inc.			
By:		By:	
Name:		Name:	
Title:		Title:	President
Date:		Date:	

MOTOROLA SOLUTIONS

TASK ORDER AND STATEMENT OF WORK
For
Services to be performed by
DataWorks Plus, LLC.
For the
Chicago Public Building Commission ("Customer")
CPD Regional Transit Terrorism Prevention and Response ("Project")

This Task Order and Statement of Work ("SOW") is being entered into on March 22, 2013 ("Effective Date") between Motorola Solutions, Inc. ("Motorola") and DataWorks Plus, LLC. ("Subcontractor") pursuant to the Subcontractor Services Agreement dated March 21, 2013 ("Agreement"), the terms of which is incorporated herein by reference. All capitalized terms not otherwise defined herein shall be the same meaning as defined in the Agreement. Subcontractor agrees that it will not provide services or incur any costs under this SOW until it receives a purchase order from Motorola.

1. SCOPE
The scope of services to be provided by Subcontractor pursuant to this SOW is described below.

DataWorks Plus shall provide project management, installation, and training services to manage the project activities listed in section 3.

The supplier will also provide the software as follows:
Part Number: DQCIIOEMCDATAWRXI.
Description: DATAWORKS PLUS FACIAL MATCH SYSTEM - CHICAGO OEMC MARCH 2013,
PRICE: $753,400.00

2. PROJECT SCHEDULE
Subcontractor agrees to perform Services under this SOW commencing on the Start Date and agrees to complete all tasks required no later than the Completion Date. Any extension or modification of this time period will require the written approval of Motorola. The Motorola Point of Contact for the project is ~~████████████~~, ~~█████████████~~ phone: 84~~██████~~ email: ~~████████~~@motorolasolutions.com

Start Date: March 22, 2013

Completion Date: April 30, 2013

3. SUBCONTRACTOR RESPONSIBILITIES AND MOTOROLA ACCEPTANCE
Subcontractor will perform the tasks and provide the deliverables as described below. Motorola will accept the services and deliverables as described below.

DataWorks Plus will provide project management, installation, and training services for the following activities:

Investigative Facial Recognition System Activities

- DataWorks Plus Facial Recognition System (Server Software)
- NEC Facial Recognition Matcher for 5M templates
- Cognitec Facial Recognition Matcher for 5M templates
- 4 Matching Servers Licenses
- 10 Client Case Management Facial Recognition Workstation Licenses with POSE Correction and Photo Editing Tools
- Real Time Data and Mugshot Interface to Chicago Mugshot Database
- Conversion of Chicago Arrest Database

Timeline:
- Dataworks can install, convert database, and provide a customized working Facial Recognition System within 3 Weeks of receiving a copy of the Chicago Mugshot Database

Real Time Screening System (RTS) Activities

- DataWorks Plus Real Time Screening System (Server Software)
- Facial Recognition Matcher for 15,000 templates
- 2 Client Real Time Screening Camera Licenses
- Labor (Project Management, Installation, and Training)

* Motorola to provide a one RTS Screening Matching Server

Assumptions:
Customer to provide:
- Data and Image Dump of Chicago Mugshot Database
- Access and support to create a real time interface to Chicago Mugshot Database for new records, modified records, and expunged/sealed records
- Motorola to provide One Data and Image Server and Four Matching Servers
- Camera Streaming Feeds (dumping video files into a directory)

4. COMPENSATION
Subcontractor will present invoices upon Motorola's acceptance of the deliverables as follows.

Software		$153,400.00
Labor		$25,000.00
Material		$ 0.0
Not to exceed this amount--	Total	$778,400.00

TO-745-IL-111312a Work-1

Subcontractor agrees to submit electronic invoices in accordance with Motorola's electronic invoice and payment process, more fully described at www.ob10.com/motorola. Subcontractor will send all invoices, supporting documentation and receipts to the individual designated at the address specified above. Motorola will pay the amount of each accurate invoice in accordance with the terms of the Agreement.

5. ADDITIONAL TERMS AND FLOW DOWN TERMS AND CONDITIONS

Per Section 3 of the Agreement, prior written approval must be obtained from Motorola to further subcontract any portion of the services described herein.

By signing below. Subcontractor agrees to and accepts this SOW including the terms of the underlying Subcontractor Services Agreement for which this SOW is governed by.

3-21-13

Subcontractor Authorized Signature   Date

DataWorks Plus, LLC
728 N. Pleasantburg Drive
Greenville, SC 29607

DataWorks *Plus*

866-632-2780 (Toll-Free)
864.672.2780 (P)
864.672.2787 (F)

MAINTENANCE AND SUPPORT AGREEMENT

AGENCY: **Motorola Solutions, Inc.**
1303 E. Algonquin Road
Schaumburg, IL 60196

TERM EFFECTIVE: **Start: 1/1/16**   **End: 12/31/16**

PAYMENT TERMS: **NET 30**

CONTRACT OPTIONS

☒ **SOFTWARE, 8X5**

☐ **DECLINE MAINTENANCE – SEE TIME AND MATERIALS INFORMATION SHEET**

PAYMENT TERMS: **NET 30**

STANDARD SOFTWARE SUPPORT: (AMOUNT: $93,408.00)
  ➢ 8 a.m. – 5 p.m. (M-F, Excluding Holidays) Telephone Support: 2 Hour Response
  ➢ Free Remote SOFTWARE Updates During Normal Business Hours
  ➢ Remote Dial-in Analysis
  ➢ Free yearly account call review upon request

Software purchased for Chicago PD from DWP Job Number 12-01831:
FACE Plus Facial Recognition System Application/Database System –
  • Face Plus Application software
  • SQL Server Application
  • Case Management Web Application Software for 10 licenses
  • Near Real-Time interface of Records from Chicago Police Arrest Oracle Database
  • Enrollment of Facial Templates of newly transferred images into NEC and Cognitec

  • NEC Matcher Servers –
      o DataWorks Plus NEC Integrator Service
      o NEC Matching Node Service

  • Cognitec Matcher Servers–
      o DataWorks Plus Cognitec Integrator Service
      o Cognitec Matching Node Service
RTS (Real-Time Screening) System –
  • DataWorks Plus Real-Time Screening Application Software
  • Matching Node Service for 15,000 Template Watchlist
  • Genetec Camera Interface/Driver
  • Real-Time Screening Camera Client (2) Licenses

DataWorks Plus, LLC
728 N. Pleasantburg Drive
Greenville, SC 29607

866-632-2780 (Toll-Free)
864.672.2780 (P)
864.672.2787 (F)

REPORTING A PROBLEM TO DATAWORKS PLUS:

1.1 The *Motorola Solutions, Inc.* can contact Technical Support using either of the following options:
   - ➤ Toll-free telephone support **(866-632-2780, dial "3" for Customer Support)**
   - ➤ Email: ***support@dataworksplus.com***
   - ➤ Customers can also generate web-based support tickets by visiting:
     www.dataworksplus.com/support

1.2 The *Motorola Solutions, Inc.* should use our toll-free number to report problems that require immediate attention. To expedite the problem, the *Motorola Solutions, Inc.* needs to have readily available, the machine name or IP address of HARDWARE or SOFTWARE with the problem, the type of SOFTWARE with the issue and a sample record number.

1. DATAWORKS PLUS RESOLUTION PROCESS: (SEE ADDENDUM/EXCLUSIONS)

2.1 DATAWORKS PLUS Technical Support Team will open a ticket in our tracking system as acknowledgment of an issue reported to us. The *Motorola Solutions, Inc.* can request the ticket number for their tracking purposes.

2.2 DATAWORKS PLUS Technical Support will connect to the system remotely to determine the problem and resolution.

   - ➤ DATAWORKS PLUS will contact the *Motorola Solutions, Inc.* upon closure of the ticket.

   - ➤ DATAWORKS PLUS will, at no additional expense to the *Motorola Solutions, Inc.*, correct any failures of the covered SOFTWARE to meet its specifications.

2.3 If the remote site support does not satisfactorily resolve the problem, DATAWORKS PLUS may choose to send a qualified technician to your site to correct the problem. The decision to send a technician onsite will be at the sole discretion of DATAWORKS PLUS and will be done at no additional expense to the *Motorola Solutions, Inc.*.

2. DATAWORKS PLUS RESPONSIBILITIES TO SOFTWARE:

3.1 DATAWORKS PLUS will, at no additional expense to the *Motorola Solutions, Inc.*, provide all enhancements, additions and updates to the SOFTWARE. The *Motorola Solutions, Inc.* can contact our Technical Support team to schedule SOFTWARE updates for any SOFTWARE purchased from DATAWORKS PLUS. All SOFTWARE updates should be scheduled during normal business hours. Fees for non-business hours updates can be provided as needed.

   - ✓ DATAWORKS PLUS warrants that its products are free from viruses. Any virus introduced to the *Motorola Solutions, Inc.'s* system by DATAWORKS PLUS will be remedied at the sole expense of DATAWORKS PLUS.

3. Motorola Solutions, Inc.'S RESPONSIBILITIES:

4.1 Maintenance does not cover virus protection or system failure due to virus infection. The on-site system administrator is responsible for Operating System updates and Anti-virus SOFTWARE updates. The *Motorola Solutions, Inc.* will be responsible for any damage or failure caused by a computer virus. In the event that a system becomes infected and the *Motorola Solutions, Inc.* requires

DataWorks Plus, LLC
728 N. Pleasantburg Drive
Greenville, SC 29607

866-632-2780 (Toll-Free)
864.672.2780 (P)
864.672.2787 (F)

assistance, DATAWORKS PLUS will assist the *Motorola Solutions, Inc.* on a time and materials basis. Systems that have been infected can contact DATAWORKS PLUS to assist with rebuilds after they have completed a complete virus scan and malware scan of the system.

4.2   However, the *Motorola Solutions, Inc.* can, at no additional expense, contact our technical support team for assistance in setting the proper exclusions for anti-virus solutions provided by the *Motorola Solutions, Inc.*.

4.3   The *Motorola Solutions, Inc.* is responsible for providing a backup solution and ensuring that backups are being conducted. The *Motorola Solutions, Inc.* can, at no additional expense, contact DATAWORKS PLUS support to configure SQL backups to disk or USB drive. DATAWORKS PLUS encourages customers to provide a 3rd party backup solution.

4. DATAWORKS PLUS HARDWARE RESPONSIBILITIES: (The section below relates to HARDWARE listed on this contract that is covered by DATAWORKS PLUS)

5.1   DATAWORKS PLUS will, at no additional expense to the *Motorola Solutions, Inc.*, repair or replace any piece of covered HARDWARE that malfunctions due to normal wear and tear based on manufacturer specifications at the time of purchase. This does not cover HARDWARE malfunctions due to acts of God, abusive damage or accidents, or HARDWARE/HARDWARE components replaced at the discretion of the *Motorola Solutions, Inc.*.

5.2   This contract does not include consumable items such as (but not limited to) batteries, printer paper, printer ribbons, toner, photographic paper, print heads, magnetic tapes, or transfer ribbons for printers. This applies only to customers who have purchased printers from DATAWORKS PLUS and those printers are under a current support agreement.

5.3   DATAWORKS PLUS reserves the right to replace any piece of covered HARDWARE with the same or comparable model if the existing model is no longer available. The decision to replace HARDWARE is at the sole discretion of DATAWORKS PLUS.

5.4   DATAWORKS PLUS reserves the right to discontinue coverage for printers that become "general use" printers, instead of printers used exclusively for DATAWORKS PLUS applications. In this event, DATAWORKS PLUS will honor the terms in this agreement but may discontinue coverage upon contract renewal.

5.5   DATAWORKS PLUS will, at no additional expense to the *Motorola Solutions, Inc.*, provide next-day delivery (except Sundays and Holidays, in which case, delivery will be scheduled for the next business day) of a replacement unit for any piece of covered HARDWARE that malfunctions due to normal wear and tear. DATAWORKS PLUS will provide next-day delivery by UPS Red Label, FedEx Priority Overnight, or a similar service. Replacement units will be loaned to the *Motorola Solutions, Inc.* until DATAWORKS PLUS has repaired the failed unit or until DATAWORKS PLUS makes the decision to provide a permanent replacement.

5.6   DATAWORKS will provide telephone assistance for connectivity for defective HARDWARE listed below: Camera equipment, panner sets, keyboards, external disk drives, monitors, mice.

5.7   DATAWORKS PLUS will, at no additional expense to the *Motorola Solutions, Inc.*, provide all computer-related and firmware updates as deemed necessary, for all computer equipment purchased

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from DATAWORKS PLUS and all DATAWORKS PLUS SOFTWARE applications. Additional charges may apply for firmware upgrade for mobile devices.

5. CONNECTIVITY:

6.1 DATAWORKS PLUS will provide upon request, at no additional expense to the *Motorola Solutions, Inc.*, one USB modem, modem SOFTWARE, and remote connectivity SOFTWARE (such as VNC or Remote Desktop) necessary to provide remote site support. The *Motorola Solutions, Inc.* is responsible for providing a VPN or direct-inward-dial telephone line. DATAWORKS PLUS is not responsible for any annual or monthly SOFTWARE fees for connectivity purposes.

6. ADDITIONAL TRAINING:

7.1 Upon request, DATAWORKS PLUS will provide a 30% discount on refresher training to the *Motorola Solutions, Inc.*. Quotes for training can be obtained by contacting Deanna Allen, Director of Technical Support, at 866 632 2780 x 6731.

7. ASSISTANCE BEYOND THE SCOPE OF THIS CONTRACT:

8.1 Additional engineering and support efforts by DATAWORKS PLUS, beyond the scope of this agreement, may be charged as follows. This may include any related travel and administrative expenses.

BILLABLE RATES
(Outside the scope of a current Maintenance and Support Agreement)

8 a.m. – 5 p.m. (M-F, local time)	$180 per hour, 2 hours minimum charge
After 5 p.m., Saturday, Sunday and Holidays	$260 per hour, 2 hours minimum charge

8. CONTRACT CANCELLATION:

9.1 The *Motorola Solutions, Inc.* through written notification to DATAWORKS PLUS may cancel this maintenance/support agreement. Any unused portion of the maintenance/support costs listed on this contract will be refunded to the *Motorola Solutions, Inc.* at a pro-rated amount.

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Greenville, SC 29607

DataWorks Plus

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864.672.2780 (P)
864.672.2787 (F)

**See Addendums A and B for information on moving SOFTWARE licenses to new HARDWARE and Non-Maintenance Time and Materials Rates.

If your Agency requires the CJIS security addendum documentation for our support staff, please contact ████████ ████████ and this will be sent at the earliest.

DATAWORKS PLUS

Federal ID: 57-1104887

Name: ████████████

Signature: ████████████

Date: ___November 10, 2016___

Invoice: ___TBD___

Motorola Solutions, Inc.

Name: ___████████___

Signature: ___████████___

Title: ___Customer Service Manager___

Date: ___November 10,2016___

PO#: _____

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Greenville, SC 29607

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864.672.2780 (P)
864.672.2787 (F)

ADDENDUM A

Occasionally, customers have a need to move our SOFTWARE licenses to new HARDWARE, either due to HARDWARE failure or simply as a HARDWARE upgrade. DATAWORKS PLUS considers application upgrades as a part of our standard maintenance plan. However, system moves are not covered under the plan. Customer should contact DATAWORKS PLUS for pricing for system moves. Customers who need to move SOFTWARE/databases to new HARDWARE will need to do the following:

1. Contact DATAWORKS PLUS at **866.632.2780 x6731** for pricing and scheduling;

2. Provide DATAWORKS PLUS with an equivalent HARDWARE solution as the original HARDWARE, with any SOFTWARE installed that was originally installed by the Agency;

3. Provide VPN access to the new system and the old system simultaneously until the move is complete;

4. Provide access to system backups and logs.

5. DATAWORKS PLUS understands that some Agencies prefer to handle application license moves to customer owned HARDWARE without DATAWORKS PLUS assistance. In this instance, it is the Agencies responsibility to notify DATAWORKS PLUS so that maintenance coverage will continue for the license(s). The following information should be given to DATAWORKS PLUS to update license information on the maintenance record:

   - Previous machine name and IP
   - New machine name and IP

➤ DATAWORKS PLUS is not responsible for providing on-site assistance in the event of customer provided hardware failure.

➤ DATAWORKS PLUS is not responsible for engineering/development work to reconstruct corrupt databases due to customer-provided hardware failure, or failure due to viruses/malware.

➤ Customers who wish to schedule license moves and/or hardware upgrades may contact DATAWORKS PLUS for fees and scheduling.

➤ Customers may contact us for pricing for a maintenance uplift plan that includes software license moves.

➤ Our standard rates of $180 per hour, 2 hour minimum, will apply for any installation or deployment related support issues after the initial training and installation for Kiosk.

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Greenville, SC 29607

DataWorks Plus

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864.672.2780 (P)
864.672.2787 (F)

ADDENDUM B- REFERENCE ONLY

DATAWORKS PLUS
Non-Customer Time and Materials Information Sheet

DATAWORKS PLUS regrets that your Agency will no longer continue with a standard maintenance contract and hope to work with you as a regular maintenance customer in the future. To assist you during this time, please review the following "Time and Materials" procedures listed below:

➤ If technical assistance is needed, please contact DATAWORKS PLUS at 866.632.2780 x 3. The rate for T&M customers is as follows:

BILLABLE RATES
(Without a Maintenance and Support Agreement)

| 8 a.m. – 5 p.m. (M-F, local time) | $225 per hour, 2 hours minimum charge |
| After 5 p.m., Saturday, Sunday and Holidays | $450 per hour, 2 hours minimum charge |

➤ DATAWORKS PLUS will open a ticket for your Agency but will need a purchase order before proceeding. Typically, this purchase order will be for the two-hour minimum listed above.
➤ Upon receipt of the purchase order, our technicians will connect to your site to determine the cause of the problem and an estimate of time for resolution.
➤ If the problem can be resolved during the two-hour minimum time-frame listed in the purchase order, we will proceed with the repair. DATAWORKS PLUS support technicians will contact your Agency before going above the time limit issued by your Agency.
➤ If the problem requires HARDWARE to resolve, DATAWORKS PLUS will issue your Agency a quote for the HARDWARE separately, provided the HARDWARE is not listed as obsolete by DATAWORKS PLUS. T&M agencies are responsible for shipping costs for the replacement HARDWARE.
➤ Upon closure of the ticket, DATAWORKS PLUS will issue an invoice with the purchase order given at the time of the initial call. Please note that agencies with current maintenance contracts will get priority in our support tracking system. However, we are happy to give agencies a time-frame for resolution.
➤ DATAWORKS PLUS does not provide on-site support for non-maintenance customers.
➤ DATAWORKS PLUS does not provide SOFTWARE upgrades for non-maintenance customers.

It is our desire to assist agencies in a timely fashion and to the satisfaction of those agencies. Please sign and return this letter along with your PO as acknowledgement to this agreement.

Agency Name: _____

Name:_____

Signature:_____

Title:_____

Date:_____

PO#:_____

MOTOROLA *SOLUTIONS*

TASK ORDER AND STATEMENT OF WORK
For
Services to be performed by
DataWorks Plus, LLC.
For the
Chicago Public Building Commission ("Customer"
TO896 2016 DataWorks Software Support ("Project")

This Task Order and Statement of Work ("SOW") is being entered into on November 10, 2016 ("Effective Date") between Motorola Solutions, Inc. ("Motorola") and DataWorks Plus, LLC. ("Subcontractor") pursuant to the Subcontractor Services Agreement dated November 10, 2016 ("Agreement'), the terms of which is incorporated herein by reference. All capitalized terms not otherwise defined herein shall be the same meaning as defined in the Agreement. Subcontractor agrees that it will not provide services or incur any costs under this SOW until it receives a purchase order from Motorola.

1. SCOPE
The scope of services to be provided by Subcontractor pursuant to this SOW is described below.

STANDARD SOFTWARE SUPPORT
_ 8 a.m. – 5 p.m. (M-F, Excluding Holidays) Telephone Support: 2 Hour Response
_ Free Remote SOFTWARE Updates During Normal Business Hours
_ Remote Dial-in Analysis
_ Free yearly account call review upon request

2. PROJECT SCHEDULE
Subcontractor agrees to perform Services under this SOW commencing on the Start Date and agrees to complete all tasks required no later than the Completion Date. Any extension or modification of this time period will require the written approval of Motorola. The Motorola Point of Contact for the project is ▮▮▮▮▮▮▮, ▮▮▮▮ ▮▮▮▮▮, phone: ▮▮▮▮▮▮▮, email: ▮▮▮▮▮▮@motorolasolutions.com

Start Date: January 1, 2016

Completion Date: December 31, 2016

3. SUBCONTRACTOR RESPONSIBILITIES AND MOTOROLA ACCEPTANCE
Subcontractor will perform the tasks and provide the deliverables as described below. Motorola will accept the services and deliverables as described below.

STANDARD SOFTWARE SUPPORT
_ 8 a.m. – 5 p.m. (M-F, Excluding Holidays) Telephone Support: 2 Hour Response
_ Free Remote SOFTWARE Updates During Normal Business Hours
_ Remote Dial-in Analysis
_ Free yearly account call review upon request

DataWorks will CC ████████████ *on all communication with OEMC and CPD.*

4. COMPENSATION
Subcontractor will present invoices upon Motorola's acceptance of the deliverables as follows.

STANDARD SOFTWARE SUPPORT		*$93,408.00*
Special payment terms of Net 15.	*Total:*	*$93,408.00*

Subcontractor agrees to submit electronic invoices in accordance with Motorola's electronic invoice and payment process, more fully described at www.ob10.com/motorola. Subcontractor will send all invoices, supporting documentation and receipts to the individual designated at the address specified above. Motorola will pay the amount of each accurate invoice NET15.

5. ADDITIONAL TERMS AND FLOW DOWN TERMS AND CONDITIONS

Per Section 3 of the Agreement, prior written approval must be obtained from Motorola to further subcontract any portion of the services described herein.

By signing below, Subcontractor agrees to and accepts this SOW including the terms of the underlying Subcontractor Services Agreement for which this SOW is governed by.

_____   _____
Subcontractor Authorized Signature   Date

DataWorks Plus provides Runtime licensing for SQL Server for use only with DataWorks Plus applications. Licensing is provided through the Microsoft ISV Royalty License program. DataWorks Plus' Microsoft ISV Agreement number is 3787123.

Sample license agreements for the DataWorks Plus software are provided below:

DataWorks Plus, LLC.

Client Software License Agreement

LICENSE AND PROTECTION

1. **License Grant.** DataWorks Plus, LLC. grants to You, and You purchase, subject to the following terms and conditions, a nonexclusive, nontransferable right to use the accompanying copy of Software (in object code form only). Each copy of the software may be used by a single operator on a single computer (i.e. with a single CPU) solely for your use. You may not reverse engineer, decompile, or disassemble the software, system files, or data files. All rights not specifically granted to you are retained by DataWorks Plus, LLC and/or its Licensors.

2. **Protection of Software.** You agree to take all reasonable steps to protect the Software and Documentation from unauthorized copying, use, or unauthorized disclosure to third persons. The Software source code represents and embodies trade secrets of DataWorks Plus, LLC and/or its licensors. The source code and embodied trade secrets are not licensed to you and any modification, addition, or deletion is strictly prohibited. You agree not to sublease, rent, and transfer or disassemble, decompile, or otherwise reverse engineer the Software or the files for any reason such as to discover the source code, architecture and/or the trade secrets contained in the source code, or the system.

3. **Copies and Adaptations.** You may make or authorize the making of copies or adaptations of the Software provided that any new copy or adaptation is created as an essential step in the utilization of the Software and is used in no other manner, or is for archival purposes only to back-up use of the Software. All proprietary rights notices must be faithfully reproduced and included on all copies and adaptations. You may copy the Documentation for your internal use only.

4. **Ownership.** Ownership of, title to, the Software and Documentation (including any adaptations or copies) shall be held by DataWorks Plus, LLC and/or its licensors. Copies are provided to you only to allow you to exercise your rights under the License. Only the License is purchased by you.

5. **Restrictions.** Except as expressly authorized in the Contract, You agree not to rent, lease, sublicense, distribute, transfer, copy, reproduce, display, modify, or time share the Software or Documentation or disclose Confidential Information as described in the Contract without the prior written consent of DataWorks Plus, LLC.

6. **Transfer of License.** You may transfer this License to another person or entity if you obtain prior written approval of DataWorks Plus, LLC. DataWorks Plus, LLC will not withhold approval if You advise DataWorks Plus, LLC. in writing of the name and address of the proposed transferee and the transferee agrees in writing to be bound by this Agreement. If DataWorks Plus, LLC approves the transfer of License, You agree to transfer all copies of the Software and Documentation, including any copies or adaptations you have made.

7. **Term.** This License is effective from the date of the Contract of which the License is party, and will remain in force until terminated. You may terminate this License at any time by destroying the Documentation and the Software together will all copies and adaptations provided you give the Contractor a written notice identifying the date, time, place and subject matter destroyed. This License shall also automatically terminate if you breach any of the terms or conditions of the License. You agree to destroy the original and all adaptations or

copies of the Software and Documentation, or to return them to DataWorks Plus, LLC upon termination of this License.

DataWorks Plus, LLC.

Server Software License Agreement

<u>LICENSE AND PROTECTION</u>

1. **License Grant.** DataWorks Plus, LLC grants to You, and You purchase, subject to the following terms and conditions, a nonexclusive, nontransferable right to use the accompanying copy of Software (in object code form only). Each copy of the software may be used on a single computer (i.e. with a single CPU) and service the number of computers or CPUs and operators as specified above solely for your use. You may not reverse engineer, decompile, or disassemble the software, system files, or data files. All rights not specifically granted to you are retained by DataWorks Plus, LLC and/or its Licensors.

2. **Protection of Software.** You agree to take all reasonable steps to protect the Software and Documentation from unauthorized copying, use, or unauthorized disclosure to third persons. The Software source code represents and embodies trade secrets of DataWorks Plus, LLC and/or its licensors. The source code and embodied trade secrets are not licensed to you and any modification, addition, or deletion is strictly prohibited. You agree not to sublease, rent, transfer, or disassemble, decompile, or otherwise reverse engineer the Software or the files for any reason such as to discover the source code, architecture and/or the trade secrets contained in the source code, or the system.

3. **Copies and Adaptations.** You may make or authorize the making of copies or adaptations of the Software provided that any new copy or adaptation is created as an essential step in the utilization of the Software and is used in no other manner, or is for archival purposes only to back-up use of the Software. All proprietary rights notices must be faithfully reproduced and included on all copies and adaptations. You may copy the Documentation for your internal use only.

4. **Ownership.** Ownership of, title to, the Software and Documentation (including any adaptations or copies) shall be held by DataWorks Plus, LLC and/or its licensors. Copies are provided to you only to allow you to exercise your rights under the License. Only the License is purchased by you.

5. **Restrictions.** Except as expressly authorized in the Contract, You agree not to rent, lease, sublicense, distribute, transfer, copy, reproduce, display, modify, or time share the Software or Documentation or disclose Confidential Information as described in the Contract without the prior written consent of DataWorks Plus, LLC.

6. **Transfer of License.** You may transfer this License to another person or entity if you obtain prior written approval of DataWorks Plus, LLC. DataWorks Plus, LLC will not withhold approval if you advise DataWorks Plus, LLC in writing of the name and address of the proposed transferee and the transferee agrees in writing to be bound by this Agreement. If DataWorks Plus, LLC approves the transfer of License, You agree to transfer all copies of the Software and Documentation, including any copies or adaptations you have made.

7. **Term.** This License is effective from the date of the Contract of which the License is party, and will remain in force until terminated. You may terminate this License at any time by destroying the Documentation and the Software together will all copies and adaptations provided you give the Contractor a written notice identifying the date, time, place and subject matter destroyed. This License shall also automatically terminate if you breach any of the terms or conditions of the License. You agree to destroy the original and all adaptations or copies of the Software and Documentation, or to return them to DataWorks Plus, LLC upon termination of this License.

Name and address information about this vendor will appear on the city's website at www.cityofchicago.org

City of Chicago
Office of City Comptroller
Room 700
121 N. LaSalle Street
Chicago, IL 60602

Order Payment Voucher

Voucher Number	Voucher Total	Vendor Number – Site Code	Page
PVCI13CI072352	1,084,530.24	702720 - A	1

Remittance Address:	Delivered To:
PUBLIC BUILDING COMMISSION CHG 50 W. WASHINGTON (EFT) CHICAGO, IL 60602	058- OEC1411 1411 W. MADISON Chicago-IL

Release Date:	04/25/2013	Prepared By :	SS
		Approval Date:	05/28/2013

Vendor Inv #:	2013.074	Type	STANDARD	Date:	04/08/2013	PO#	12301	Rel#	104	Rcv Date:	05/23/2013

IGA

Ln	Commodity / Description	Qty Recd	Unit of Meas.	Unit Cost	Total Cost
1	00000	68,606.26	USD	1.00	68,606.26
	IGA				
1	00000	90,711.71	USD	1.00	90,711.71
	IGA				
1	00000	925,212.27	USD	1.00	925,212.27
	IGA				

Invoice Number:	2013.074	Total:		1,084,530.24

Grand Total:	1,084,530.24

Accounting Information :

Invoice	Ln	BFY	FUND	Cost Ctr	Appr	Accnt	Actv	Project	Rpt Cat	Genrl	Futr	Total Cost
2013.074	1	009	0P46	0571005	0138	220138	0000	00000000	09GK53	00000	0000	68,606.26
2013.074	1	009	0P46	0571005	0400	220400	0000	00000000	09GK53	00000	0000	90,711.71
2013.074	1	009	0P46	0571005	0400	220400	0000	00000000	09GK53	00000	0000	925,212.27

Grand Total:	1,084,530.24

Entered By	
Auditor's Approval	
Received By	

Dept Certification of Receipt

I hereby certify that the invoices have not been previously vouchered and that the goods or services indicated were received and that the account is approved from appropriations as shown above..

Authorized Signature _____ Date

Dept Certification of Contract Prices

I hereby certify that the Department Project Manager has verified the work, services or goods for which payment is sought are as described in the contract and at the price charged in the contract.

Commissioner or Dept Head _____ Date

PUBLIC BUILDING COMMISSION
OF CHICAGO

Invoice Date: 4/08/2013

Invoice No. 2013.074
REMITTANCE ADDRESS

Gary Schenkel
Executive Director
City of Chicago
Office of Emergency Management &
Communication
1411 W Madison
Chicago, IL 60607

Richard J. Daley Center
50 W. Washington Street
Room 200
Chicago, IL 60602
Attn: Daryl McNabb
Director of Finance

Attn: Natalie Gutierrez

Please provide funding for:

OEMC Camera Infrastructure Program UT #1 (04240)
Task Order #606
CPD – Transit Terrorism Prevention and Response

Construction:	$1,027,391.00
PM Services:	$41,433.16
PBC Administrative Fee (1st, 2nd and 3rd installments):	$15,706.08

FINAL INVOICE TOTAL AMOUNT: $1,084,530.24

Requested By: ███████████

Daryl McNabb
Director of Finance

Date: 4/8/13

OEMC Grant Funding Source: 2009 CPD – TSA Grant

PUBLIC BUILDING COMMISSION OF CHICAGO

INVOICE # 2013.074
OEMC CAMERA INFRASTRUCTURE PROGRAM
PBC PROJECT NUMBER 04240 - UNDERTAKING # 1
CPD - TRANSIT TERRORISM PREVENTION AND RESPONSE
OEMC GRANT FUNDING SOURCE - 2009 CPD - TSA Grant
Invoice Includes Task Order #'s TO606

FINAL INVOICE

VENDOR DESIGN-CONSTRUCTION SERVICES		REFERENCE
ORIGINAL BUDGETED AMOUNT	$1,027,391.00	
REVISED BUDGETED AMOUNT	$1,027,391.00	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$1,027,391.00	
BALANCE TO BECOME DUE	$0.00	
PROJECT MANAGEMENT		
ORIGINAL BUDGETED AMOUNT	$100,000.00	
REVISED BUDGETED AMOUNT	$41,433.16	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$41,433.16	
BALANCE TO BECOME DUE	$0.00	
PBC ADMINISTRATIVE COSTS		
ORIGINAL BUDGETED AMOUNT	$15,706.08	
REVISED BUDGETED AMOUNT	$15,706.08	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$15,706.08	
BALANCE TO BECOME DUE	$0.00	
LEGAL FEES		
ORIGINAL BUDGETED AMOUNT	$0.00	
REVISED BUDGETED AMOUNT	$0.00	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$0.00	
BALANCE TO BECOME DUE	$0.00	
INVOICE TOTAL		
ORIGINAL BUDGETED AMOUNT	$1,143,097.08	
REVISED BUDGETED AMOUNT	$1,084,530.24	
NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$1,084,530.24	
BALANCE TO BECOME DUE	$0.00	

MOTOROLA

MOTOROLA SOLUTIONS, INC.
1301 E. Algonquin Road
Schaumburg, IL 60196

Visit our web site at: www.motorola.com

INVOICE

TOTAL INVOICE AMOUNT:	$1,027,391.00
MOTOROLA INVOICE NUMBER:	
INVOICE DATE: 03/18/2013	
PAYMENT DUE: PER CONTRACT	
CUSTOMER ACCOUNT NUMBER:	0001
PURCHASE ORDER DATE:	
YOUR P.O.#.	CONTRACT

BILL TO
PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

For questions concerning this invoice please contact
Motorola at: 1-888-567-7347

Payment Terms: LARGE CONTRACT
Sales Order Number: 0809051860056

Motorola Solutions, Inc. Federal Tax Id: 36-1115800

Invoice Detail

Item	Model Number	Qty	Description	Unit Price	Amount
1		1	CONTRACT VALUE: $1,047,072.00		
			CO-001 - S(35,520.00)		
			CO-002 - 515,839.00		
2		1	REVISED CONTRACT VALUE: $1,027,391.00		
3		1	AMOUNT PREVIOUSLY PAID: $0.00		
4		1	AMOUNT DUE THIS INVOICE: $1,027,391.00		
5		1	RETAINAGE: $0		
6		1	THIS INVOICE IS FOR TASK ORDER: CPD REGIONAL TRANSIT TERRORISM PREVENTION AND RESPONSE		
			TOTAL ORDER VALUE: $1,027,391.00		
			Project Purpose is to integrate analytics software solutions from three vendors IBM, BRS & BriefCam		
			To support the Chicago Police Department's Transit and Terrorism Prevention and Response Project		
			Motorola will procure and install the associated software, additional computer servers and data warehouse		
			Infrastructure in support of this initiative.		
7		1	Video Management System. Management Client at the OEMC		
10		1	Undertaking/Project Number: U1/04240		
11		1	Project Name: CPD Regional Transit Terrorism Prevention and Response		
12		1	Task Order Number: 606		
13		1	Task Order Name: CPD Regional Transit Terrorism Prevention and Response		
14		1	PBC Client Name: Office of Emergency Management Communications		
		SUBTOTAL			$1,027,391.00
			PLEASE PAY THIS AMOUNT (PAYMENT DUE: PER CONTRACT)		$1,027,391.00

Detach here and return bottom portion with your payment

INVOICE NUMBER	CUSTOMER ACCOUNT NUMBER	PAYMENT DUE
		PER CONTRACT

Please put your Invoice Number and your Customer Account Number
on your check for prompt processing.

PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

Payment Coupon

Invoice Total	Amount Paid
$1,027,391.00	

Send Payment To:
MOTOROLA
MOTOROLA SOLUTIONS, INC.
13108 Collections Center Drive
Chicago, IL 60693

Manufacturer	Model/Part	Description	$	Serial Number	Location
HP	654080-S01	Hewlett Packard HP DL370 G6 E5649 2P 8GB-R US Svr	$3,450.00		OEMC\Room 252
HP	640011-005	Hewlett Packard HP DL370 G7 E5649 2P 8GB-R US Svr	$4,200.00		OEMC\Room 252
HP	640011-005	Hewlett Packard HP DL370 G7 E5649 2P 8GB-R US Svr	$4,200.00		OEMC\Room 252
HP	640011-005	Hewlett Packard HP DL370 G7 E5649 2P 8GB-R US Svr	$4,200.00		OEMC\Room 252
HP	640011-005	Hewlett Packard HP DL370 G7 E5649 2P 8GB-R US Svr	$4,200.00		OEMC\Room 252
HP	654080-S01	Hewlett Packard HP DL370 G6 E5649 2P 8GB-R US Svr	$3,450.00		OEMC\Room 252
IBM	1818-G1A	EXP5060 Hi-Density Enclosure and DDMs	$39,012.40		OEMC\Room 252
IBM	1818-G1A	EXP5060 Hi-Density Enclosure and DDMs	$39,012.40		BCF
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		CPD Academy
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		CPD Academy
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		CPD Academy
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,568.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC
HP	LJ452AV (custom)	HP Z820 workstation only 2G Graphics Card	$4,569.00		ISCN\OEMC

Project No.	Project Name	TO No.	TO Name	Employee	Date	Hours Worked	Rate	Total
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/03/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/04/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/05/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/09/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/10/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/11/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/12/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/17/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/18/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/19/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/23/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/24/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/25/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/26/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/30/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	01/31/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/01/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/02/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/06/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/07/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/08/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/09/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/13/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/14/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/14/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/15/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/16/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/20/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/21/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/22/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/23/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/27/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/28/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	02/29/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/01/12	3	$110.73	$332.19
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/05/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/06/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/07/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/08/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/12/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/13/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/14/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/15/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/19/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/20/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/21/12	1.5	$110.73	$166.10

Project No.	Project Name	TO No.	TO Name	Employee	Date	Hours Worked	Rate	Total
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/22/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/26/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/27/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/28/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Dave Molinaro	03/29/12	1.5	$110.73	$166.10
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	04/09/12	1	$84.74	$84.74
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	04/24/12	2	$84.74	$169.48
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/01/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/07/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/08/12	2	$84.74	$169.48
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/09/12	6	$84.74	$508.44
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/16/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/17/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/22/12	2	$84.74	$169.48
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	05/31/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/01/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/06/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/08/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/13/12	2	$84.74	$169.48
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/15/12	2	$84.74	$169.48
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/22/12	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/25/12	4	$84.74	$338.96
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	06/28/12	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	07/02/12	2	$84.74	$169.48
04240	CIP U1	606	CPD - Regional Tran	Brian Pirok	12/11/12	1.5	$73.44	$110.16
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	12/27/12	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	01/25/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/11/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/12/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/13/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/14/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/15/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/18/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/19/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/20/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/21/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/22/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/25/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/26/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/27/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	02/28/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/01/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/04/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/05/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/06/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/07/13	8	$84.74	$677.92

Project No.	Project Name	TO No.	TO Name	Employee	Date	Hours Worked	Rate	Total
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/08/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/11/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/12/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/13/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/14/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/15/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/18/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/19/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/20/13	8	$84.74	$677.92
04240	CIP U1	606	CPD - Regional Tran	Randy Williams	03/21/13	8	$84.74	$677.92
							TOTAL	$41,433.16

Original (Comptroller)   Original (Comptroller)

Name and address Information about this vendor will appear on the city's website at www.cityofchicago.org

City of Chicago
Office of City Comptroller
Room 700
121 N. LaSalle Street
Chicago, IL 60602

Order Payment Voucher

Voucher Number	Voucher Total	Vendor Number – Site Code	Page
PVCI13CI071988	1,359,867.72	702720 - A	1

Remittance Address:	Delivered To:
PUBLIC BUILDING COMMISSION CHG	058- OEC1345
50 W. WASHINGTON (EFT)	1345 W. MADISON
CHICAGO, IL 60602	Chicago-IL
	Prepared By : SS
Release Date: 03/14/2013	Approval Date: 04/24/2013

Vendor Inv #:	2013.018R1	Type	STANDARD	Date:	02/11/2013	PO#	12301	Rel#	95	Rcv Date:	04/18/2013
IGA											

Ln	Commodity / Description	Qty Recd	Unit of Meas.	Unit Cost	Total Cost
1	00000 IGA	36,300.20	USD	1.00	36,300.20

Invoice Number:	2013.018R1		Total:		36,300.20

Vendor Inv #:	2013.075	Type	STANDARD	Date:	04/08/2013	PO#	12301	Rel#	102	Rcv Date:	04/18/2013
IGA											

Ln	Commodity / Description	Qty Recd	Unit of Meas.	Unit Cost	Total Cost
1	00000 IGA	1,323,567.52	USD	1.00	1,323,567.52

Invoice Number:	2013.075		Total:		1,323,567.52

Grand Total:		1,359,867.72

Accounting Information :

Invoice	Ln	BFY	FUND	Cost Ctr	Appr	Accnt	Actv	Project	Rpt Cat	Genrl	Futr	Total Cost
2013.018R1	1	011	0M05	0582705	0140	220140	0000	00000000	11JS4B	00000	0000	36,300.20
2013.075	1	009	0P46	0571005	0400	220400	0000	00000000	09GK53	00000	0000	1,323,567.52

Grand Total:		1,359,867.72

Entered By		Dept Certification of Receipt	Dept Certification of Contract Prices
Auditor's Approval		I hereby certify that the invoices have not been previously vouchered and that the goods or services indicated were received and that the account is approved from appropriations as shown above..	I hereby certify that the Department Project Manager has verified the work, services or goods for which payment is sought are as described in the contract and at the price charged in the contract.
Received By		Authorized Signature Date	Commissioner or Dept Head Date

PUBLIC BUILDING COMMISSION OF CHICAGO

Invoice Date: 4/08/2013

Invoice No. 2013.075

REMITTANCE ADDRESS

Gary Schenkel
Executive Director
City of Chicago
Office of Emergency Management &
Communication
1411 W Madison
Chicago, IL 60607

Richard J. Daley Center
50 W. Washington Street
Room 200
Chicago, IL 60602
Attn: Daryl McNabb
Director of Finance

Attn: Natalie Gutierrez

Please provide funding for:

OEMC Camera Infrastructure Program UT #1 (04240)
Task Order #745
CPD – Transit Terrorism Prevention and Response

Construction:	$1,300,000.00
PM Services:	$4,067.52
PBC Administrative Fee (1st, 2nd and 3rd installments):	$19,500.00

FINAL INVOICE TOTAL AMOUNT: $1,323,567.52

Requested By: ████████

Daryl McNabb
Director of Finance

Date: 4/8/13

OEMC Grant Funding Source: 2009 CPD – TSA Grant

PUBLIC BUILDING COMMISSION OF CHICAGO

INVOICE # 2013.075
OEMC CAMERA INFRASTRUCTURE PROGRAM
PBC PROJECT NUMBER 04240 · UNDERTAKING # 1
CPD · TRANSIT TERRORISM PREVENTION AND RESPONSE
OEMC GRANT FUNDING SOURCE · 2009 CPD · TSA Grant
Invoice Includes Task Order #'s TO745

FINAL INVOICE

VENDOR DESIGN-CONSTRUCTION SERVICES		REFERENCE
ORIGINAL BUDGETED AMOUNT	$1,300,000.00	
REVISED BUDGETED AMOUNT	$1,300,000.00	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$1,300,000.00	
BALANCE TO BECOME DUE	$0.00	
PROJECT MANAGEMENT		
ORIGINAL BUDGETED AMOUNT	$75,000.00	
REVISED BUDGETED AMOUNT	$4,067.52	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$4,067.52	
BALANCE TO BECOME DUE	$0.00	
PBC ADMINISTRATIVE COSTS		
ORIGINAL BUDGETED AMOUNT	$19,500.00	
REVISED BUDGETED AMOUNT	$19,500.00	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$19,500.00	
BALANCE TO BECOME DUE	$0.00	
LEGAL FEES		
ORIGINAL BUDGETED AMOUNT	$0.00	
REVISED BUDGETED AMOUNT	$0.00	
NET PREVIOUSLY PAID	$0.00	
TOTAL NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$0.00	
BALANCE TO BECOME DUE	$0.00	
INVOICE TOTAL		
ORIGINAL BUDGETED AMOUNT	$1,394,500.00	
REVISED BUDGETED AMOUNT	$1,323,567.52	
NET PREVIOUSLY PAID	$0.00	
PENDING INVOICES	$0.00	
DUE THIS INVOICE	$1,323,567.52	
BALANCE TO BECOME DUE	$0.00	

MOTOROLA

MOTOROLA SOLUTIONS, INC.
1301 E Algonquin Road
Schaumburg, IL 60196

Visit our web site at: www.motorola.com

INVOICE

TOTAL INVOICE AMOUNT:	$1,300,000.00
MOTOROLA INVOICE NUMBER:	41179042
INVOICE DATE:	03/18/2013
PAYMENT DUE:	PER CONTRACT
CUSTOMER ACCOUNT NUMBER:	███ 0001
PURCHASE ORDER DATE:	
YOUR P.O.#:	CONTRACT

BILL TO — PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

For questions concerning this Invoice please contact
Motorola at: 1-888-567-7347

Payment Terms: LARGE CONTRACT
Sales Order Number: XXX005160030

Motorola Solutions, Inc. Federal Tax Id: 36-1115800

Invoice Detail

Item	Model Number	Qty	Description	Unit Price	Amount
1		1	CONTRACT VALUE: $1,300,000 00		
2		1	REVISED CONTRACT VALUE: $1,300,000 00		
3		1	AMOUNT PREVIOUSLY PAID: $0 00		
4		1	AMOUNT DUE THIS INVOICE: $1,300,000 00		
5		1	RETAINAGE: $0		
6		1	THIS INVOICE IS FOR TASK ORDER: CPD REGIONAL TRANSIT TERRORISM PREVENTION AND RESPONSE PHASE II		
			TOTAL ORDER VALUE: $1,300,000 00		
			Project Purpose is to integrate the facial match engine softare solution to support the Chicago Police Department's		
			Transit and Terrorism Prevention and Response Project		
7		1	Video Management System Management Client at the OEMC		
10		1	Undertaking/Project Number: U1/04240		
11		1	Project Name: CPD Regional Transit Terrorism Prevention and Response Phase II		
12		1	Task Order Number: 745		
13		1	Task Order Name: CPD Regional Transit Terrorism Prevention and Response Phase II		
14		1	PBC Client Name: Office of Emergency Management Communications		
		SUBTOTAL			$1,300,000 00
			PLEASE PAY THIS AMOUNT (PAYMENT DUE: PER CONTRACT)		$1,300,000 00

Detach here and return bottom portion with your payment

INVOICE NUMBER	CUSTOMER ACCOUNT NUMBER	PAYMENT DUE
███		PER CONTRACT

Please put your Invoice Number and your Customer Account Number
on your check for prompt processing.

PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

Payment Coupon

Invoice Total	Amount Paid
$1,300,000.00	

Send Payment To:
MOTOROLA
MOTOROLA SOLUTIONS, INC.
13108 Collections Center Drive
Chicago, IL 60693

Manufacturer	MFG Part #	Description	Unit Price	Device Type	Serial Number	Location
HP	6540801-B21	Hewlett Packard: HP DL360 G8 E5649 2P 8GB-R US Svr, See Note 1	$10,685.00	DL360-G8		OEMC\Room 252
HP	6540801-B21	Hewlett Packard: HP DL360 G8 E5649 2P 8GB-R US Svr, See Note 1	$10,685.00	DL360-G8		OEMC\Room 252
HP	6540801-B21	Hewlett Packard: HP DL360 G8 E5649 2P 8GB-R US Svr, See Note 1	$10,685.00	DL360-G8		OEMC\Room 252
HP	6540801-B21	Hewlett Packard: HP DL360 G8 E5649 2P 8GB-R US Svr, See Note 1	$10,685.00	DL360-G8		OEMC\Room 252
HP	6540801-B21	Hewlett Packard: HP DL360 G8 E5649 2P 8GB-R US Svr, See Note 1	$10,685.00	DL360-G8		OEMC\Room 252
HP	6540801-B21	Hewlett Packard: HP DL360 G8 E5649 2P 8GB-R US Svr, See Note 1	$10,685.00	DL360-G8		OEMC\Room 252

Note 1: The following components are incluled in each server.

HP DL360P GEN8 E5-2667 FIO KIT
HP DL360P GEN8 E5-2667 KIT
HP 8GB 2RX4 PC3-12800R-11 KIT
HP 1TB 6G SAS 7.2K 2.5IN SC MDL HDD
HP 9.5MM SATA DVD RW JB KIT
HP 1.83M 10A C13-UL US PWR CORD
HP ETHERNET 1GBE 4P 331FLR FIO ADPT
HP 1GB FBWC FOR P-SERIES SMART ARRA
HP 1U SFF BB GEN8 RAIL KIT
HP 460W CS PLAT PL HT PLG PWR SUPPL
MS WS08 R2 STD ED FIO NPI E F I G S
HP ILO ADV 1-SVR INCL 1YR TS&U SW
HP 3Y 4H 24X7 HW SUPPORT PROLIANT D

Project No.	Project Name	TO No.	TO Name	Employee	Date	Hours Worked	Rate	Total
04240	CIP U1	745	CPD - Regional Tran	Randy Williams	03/22/13	8	$84.74	$677.92
04240	CIP U1	745	CPD - Regional Tran	Randy Williams	03/25/13	8	$84.74	$677.92
04240	CIP U1	745	CPD - Regional Tran	Randy Williams	03/26/13	8	$84.74	$677.92
04240	CIP U1	745	CPD - Regional Tran	Randy Williams	03/27/13	8	$84.74	$677.92
04240	CIP U1	745	CPD - Regional Tran	Randy Williams	03/28/13	8	$84.74	$677.92
04240	CIP U1	745	CPD - Regional Tran	Randy Williams	03/29/13	8	$84.74	$677.92
							TOTAL	$4,067.52

MOTOROLA

MOTOROLA SOLUTIONS, INC.
1301 E. Algonquin Road
Schaumburg, IL 60196

INVOICE

TOTAL INVOICE AMOUNT.	$108,353.00
MOTOROLA INVOICE NUMBER 4121PBCTO896	
INVOICE DATE: 2/12/2016	
PAYMENT DUE: PER CONTRACT	
CUSTOMER ACCOUNT NUMBER	0001
PURCHASE ORDER DATE:	
YOUR P.O.#	CONTRACT

BILL TO   PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

**For questions concerning this Invoice please contact
Motorola at: 1-888-567-7347**

Payment Terms LARGE CONTRACT   Motorola Solutions, Inc. Federal Tax Id 36-1115800
Sales Order Number: 0609051860035

Invoice Detail

Item	Model Number	Qty	Description	Unit Price	Amount
1		1	CONTRACT VALUE: $108,353 00		
2			REVISED CONTRACT VALUE: $108,353.00		
3		1	AMOUNT PREVIOUSLY PAID: $0 00		
4		1	AMOUNT DUE THIS INVOICE: $108,353 00 FINAL INVOICE		
5		1	RETAINAGE: $0		
6		1	THIS INVOICE IS FOR TASK ORDER - 896 Dataworks2016Renewal		
			TOTAL ORDER VALUE $108,353 00		
			Service Dates: 1/01/2016 - 12/31/2016		
			Project Purpose: Dataworks2016Renewal		
			Management Client at the OEMC.		
10		1	Undertaking/Project Number: UT# /TO896		
11		1	Project Name: Dataworks 2016 Renewal - Standard Support through Dataworks 8:00am-5:00PM		
12		1	Task Order Number: 896		
13		1	Task Order Name: Dataworks 2016 Renewal		
14		1	PBC Client Name: Office of Emergency Management Communications		
		SUBTOTAL			$108,353 00
			PLEASE PAY THIS AMOUNT (PAYMENT DUE: PER CONTRACT)		$108,353 00

Detach here and return bottom portion with your payment

Payment Coupon

INVOICE NUMBER	CUSTOMER ACCOUNT NUMBER	PAYMENT DUE
4121PBCTO896		PER CONTRACT

Please put your Invoice Number and your Customer Account Number
on your check for prompt processing.

PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

Invoice Total	Amount Paid
$108,353.00	

Send Payment To:
MOTOROLA
MOTOROLA SOLUTIONS, INC.
13108 Collections Center Drive
Chicago, IL 60693

MOTOROLA

MOTOROLA SOLUTIONS, INC.
1301 E. Algonquin Road
Schaumburg, IL 60196

INVOICE

TOTAL INVOICE AMOUNT:	$108,353.00
MOTOROLA INVOICE NUMBER: 4121P0CTO896	
INVOICE DATE: 2/12/2016	
PAYMENT DUE: PER CONTRACT	
CUSTOMER ACCOUNT NUMBER	0001
PURCHASE ORDER DATE	
YOUR P O #	CONTRACT

BILL TO: PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

**For questions concerning this invoice please contact
Motorola at: 1-888-567-7347**

Payment Terms: LARGE CONTRACT
Sales Order Number: 000051060036

Motorola Solutions, Inc. Federal Tax Id: 36-1115800

Invoice Detail

Item	Model Number	Qty	Description		Unit Price	Amount
1		1	CONTRACT VALUE: $108,353.00			
2			REVISED CONTRACT VALUE: $108,353.00			
3		1	AMOUNT PREVIOUSLY PAID: $0.00			
4		1	AMOUNT DUE THIS INVOICE: $108,353.00	FINAL INVOICE		
5		1	RETAINAGE: $0			
6		1	THIS INVOICE IS FOR TASK ORDER - 896 Dataworks2016Renewal			
			TOTAL ORDER VALUE $108,353.00			
			Service Dates: 1/01/2016 - 12/31/2016			
			Project Purpose: Dataworks2016Renewal			
			Management Client in the DEMO			
10		1	Undertaking/Project Number CTN TO896			
11		1	Project Name: Dataworks 2016 Renewal - Standard Support include on Dataworks 10.00 in 5 CPRM			
12		1	Task Order Number 896			
13		1	Task Order Name: Dataworks 2016 Renewal			
14		1	PBC Client Name: Office of Emergency Management & Communications			
		SUBTOTAL				$108,353.00
			PLEASE PAY THIS AMOUNT (PAYMENT DUE: PER CONTRACT)			$108,353.00

------- Detach here and return bottom portion with your payment -------

Payment Coupon

INVOICE NUMBER	CUSTOMER ACCOUNT NUMBER	PAYMENT DUE
4121P0CTO896		PER CONTRACT

Please put your Invoice Number and your Customer Account Number
on your check for prompt processing

PUBLIC BUILDING COMMISSION OF CHICAGO
RICHARD J DALEY CENTER RM 200
50 W WASHINGTON ST STE 200
CHICAGO, IL 60602

Invoice Total	Amount Paid
$108,353.00	

Send Payment To:
MOTOROLA
MOTOROLA SOLUTIONS, INC.
13108 Collections Center Drive
Chicago, IL 60693

...ify that this bill or any ... it has not previously ...id.   3/17/16

PV05160560007 (left vertical)

MOTOROLA SOLUTIONS INC (right vertical)

City of Chicago
Office of City Comptroller
Room 700
121 N. LaSalle Street
Chicago, IL 60602

Direct Payment Voucher

Voucher Number	Voucher Total	Vendor Number – Site Code	Page
PV05160560007	265,276.00	1035967 - A	1

Remittance Address:
MOTOROLA SOLUTIONS INC
13108 COLLECTIONS CENTER DRIVE
CHICAGO, IL 60693

Delivered To:
OFFICE OF BUDGET & MANAGEMENT

Prepared By : Lori LaMantia
Approval Date: 04/01/2016

Vendor Invoice Number: 4121PBCTO894   **Vendor Invoice Date:** 02/04/2016
Subscription/License Renewal

LN	Commodity /Description	Quantity	Unit Of Meas.	Unit Cost	Total Cost
1	99861-LICENSE AGREEMENT	0	N	0	156,923.00

Vendor Invoice Number: 4121PBCTO894   **Total:** 156,923.00

Vendor Invoice Number: 4121PBCTO896   **Vendor Invoice Date:** 02/12/2016
Subscription/License Agreement

LN	Commodity /Description	Quantity	Unit Of Meas.	Unit Cost	Total Cost
1	99861-LICENSE AGREEMENT	0	N	0	108,353.00

Vendor Invoice Number: 4121PBCTO896   **Total:** 108,353.00

Grand Total: 265,276.00

Accounting Information :

Invoice	Ln	BFY	FUND	Cost Ctr	Appr	Accnt	Actv	Project	Rpt Cat	Genrl	Futr	Total Cost
4121PBCTO894	1	015	0B17	0571005	9000	220166	0000	00000000	000000	00000	0000	156,923.00
4121PBCTO896	1	015	0K68	0571005	0140	220140	0000	00000000	15NS31	00000	0000	108,353.00

Grand Total: 265,276.00

Entered By	
Auditor's Approval	
Received By	

Department Approval

I hereby certify that the invoices have not been previously vouchered and that the goods or services indicated were received and that the account is approved from appropriations as shown above.

_____ _____
Authorized Signature   Date

Department Approval

I hereby certify that the invoices have not been previously vouchered and that the goods or services indicated were received and that the account is approved from appropriations as shown above.

_____ _____
Signature   Date

7) **An inventory of Chicago's facial recognition technology that shows:**
   a. **The total number of facial recognition technology systems in possession of or accessible by law enforcement and other authorized city officials;**
      The name and manufacturer of the facial recognition technology;
   b. **Date of purchase and dates for any time the technology was updated;**
   c. **The cost of each facial recognition technology system and the total amount spent in fiscal years 2011-2016 on acquiring and using facial recognition technology; and**
   d. **Whether the purchase of the technology was funded partly or wholly through a federal grant.**

Inventory of Chicago Facial Recognition Technology Systems

# FRT Systems	1
Accessible to	Chicago Police Department
Product Name	FACE Plus Case Management
Manufacturer	DataWorks Plus, 728 N. Pleasantwork, Greenville, SC 29607
Date of Purchase	March 27, 2013
Updates	November 10, 2016

Total Cost and Spend for Face Plus Case Management

Date of Purchase Order	Expense	Vendor	Amount Paid	Federal Grant Source
4/24/2013	Initial purchase of Dataworks Face plus Case Management System	Public Building Commission	$ 1,323,567.52	FY 2009 Transit Security Grant Program (TSGP)
		Line Items for $1,323,567.52 include:		
		Public Building Commission Project Management Services and Administrative Fees	$ 23,567.52	
		Motorola	$ 1,300,000.00	
		Breakdown for Motorola Payment of $1,300,000 include:		
		Dataworks Deployment Bundle	$ 607,692.00	
		Upgrade to 5M Mug Shot Capacity	$ 38,876.00	
		Investigate Workstation Software	$ 61,540.00	
		Real Time Screening Software	$ 30,769.00	
		Real Time Camera License	$ 7,876.00	
		Cognitec Matching Engine	$ 433,846.00	
		Additional Network Engineering	$ 8,320.00	
		Servers	$ 53,425.00	
		Implementation Services	$ 57,656.00	
Date of Purchase Order	Expense	Vendor	Amount Paid	Federal Grant Source
4/1/2016	Dataworks License Renewal for 2016 (1/1/16 - 12/31/16)	Motorola Solutions Inc.	$ 108,353.00	FY15 Urban Areas Security Initiative Grant Program (UASI)

December 18, 2013

Mr. ▓▓▓▓▓▓▓▓▓▓
Project Manager
Motorola Solutions, Inc.
1303 E. Algonquin Road
Schaumburg, IL 60196

Dear Conrad,

DataWorks Plus LLC is providing this quotation to Motorola Solutions, Inc. for the software application and Interface Maintenance and Support of the Chicago OEMC Facial Recognition Project for 2014. The system is under warranty until Mid-April of 2014. Assuming that Motorola would prefer a January 1 to December 31 contract period, the Maintenance and Support charges will be pro-rated for the remainder of 2014 starting at completion of the warranty. DataWorks Plus has two plans, the first being 27/7 coverage and the second being Monday through Friday, 8 AM to 5 PM (Legal Holidays being excluded). Full details will be provided in the Maintenance Agreement Document.

DataWorks Plus has provided software and services using site provided hardware. The items covered by the Maintenance and Support Plans include:

FACE Plus Facial Recognition System Application/Database System –
    Face Plus Application software
    SQL Server Application
    Case Management Web Application Software for 10 licenses
    Near Real-Time interface of Records from Chicago Police Arrest Oracle Database
    Enrollment of Facial Templates of newly transferred images into NEC and Cognitec

    NEC Matcher Servers –
        DataWorks Plus NEC Integrator Service
        NEC Matching Node Service

    Cognitec Matcher Servers–
        DataWorks Plus Cognitec Integrator Service
        Cognitec Matching Node Service

RTS (Real-Time Screening) System –
    DataWorks Plus Real-Time Screening Application Software
    Matching Node Service for 15,000 Template Watchlist
    Genetec Camera Interface/Driver
    Real-Time Screening Camera Client (2) Licenses

2014 Pro-Rated Maintenance and Support Charges:

24/7 Plan	$ 82,272.00
Mon-Fri, 8AM – 5PM (excluding Holidays)	$ 73,948.00

TERMS:
- Price does not include local, county, state or federal taxes, if applicable.
- Invoice to be issued April 15, 2014. Price based on payment terms of 100% payment due upon receipt of invoice.
- Net 30 Payment Terms.

When placing an order, please fax a Purchase Order to (864) 672 2787. Our normal order and delivery lead-time is 30 - 90 days. If there are questions, please contact me at my direct office line, 716 ▮▮▮▮▮▮ or the DataWorks Plus toll free number, 866 632 2780, extension ▮▮▮▮.

Sincerely,

Senior Account Manager

December 19, 2013

Mr. ████████████
Project Manager
Motorola Solutions, Inc.
1303 E. Algonquin Road
Schaumburg, IL 60196

Dear Conrad,

DataWorks Plus LLC is providing this quotation to Motorola Solutions, Inc. for the
software application and Interface Maintenance and Support of the Chicago OEMC Facial
Recognition Project for 2015. DataWorks Plus has two plans, the first being 27/7 coverage
and the second being Monday through Friday, 8 AM to 5 PM (Legal Holidays being
excluded). Full details will be provided in the Maintenance Agreement Document.

DataWorks Plus has provided software and services using site provided hardware. The
items covered by the Maintenance and Support Plans include:

FACE Plus Facial Recognition System Application/Database System –
    Face Plus Application software
    SQL Server Application
    Case Management Web Application Software for 10 licenses
    Near Real-Time interface of Records from Chicago Police Arrest Oracle Database
    Enrollment of Facial Templates of newly transferred images into NEC and Cognitec

    NEC Matcher Servers –
        DataWorks Plus NEC Integrator Service
        NEC Matching Node Service

    Cognitec Matcher Servers–
        DataWorks Plus Cognitec Integrator Service
        Cognitec Matching Node Service

RTS (Real-Time Screening) System –
    DataWorks Plus Real-Time Screening Application Software
    Matching Node Service for 15,000 Template Watchlist
    Genetec Camera Interface/Driver
    Real-Time Screening Camera Client (2) Licenses

2015   Maintenance and Support Charges:

24/7 Plan $ 108,976.00

Mon-Fri, 8AM – 5PM (excluding Holidays) $ 93,408.00

TERMS:
- Price does not include local, county, state or federal taxes, if applicable.
- Invoice to be issued Jan 1, 2015. Price based on payment terms of 100% payment due upon receipt of invoice.
- Net 30 Payment Terms.

When placing an order, please fax a Purchase Order to (864) 672 2787. Our normal order and delivery lead-time is 30 - 90 days. If there are questions, please contact me at my direct office line, 716 ▓▓▓▓▓▓ or the DataWorks Plus toll free number, 866 632 2780, extension 6713.

Sincerely,

Senior Account Manager

November 24, 2015

Mr. Gary Schenkel
Executive Director
Office of Emergency Management & Communications
1411 West Madison Street
Chicago, IL 60602

Ms. Alexandra Holt
Budget Director
Office of Budget and Management
121 North LaSalle Street
Chicago, IL 60602

RE: **OEMC Camera Infrastructure Program**
CPD Facial Analytics Subscription Renewal 2016 – Undertaking #97
Undertaking Request

Dear Directors Schenkel & Holt,

The Public Building Commission (PBC) has completed the Pre-Planning Phase for Undertaking #97 and is submitting this Project Undertaking Request to the Office of Emergency Management & Communications (OEMC) and Office of Budget Management for your approval for the PBC to proceed with the planning, design and implementation of CPD Facial Analytics Subscription Renewal 2016.

This Project Undertaking Request #97 is being submitted pursuant to the Intergovernmental Agreement between the OEMC and the PBC, signed and dated April 5, 2011.

Project Scope of Work:
- This project consists of the renewal of the current Facial Matching Analytics subscription of the previously installed software located within the City of Chicago through December 31, 2016.

PBC Project Management Scope of Services
- Provide management of the planning and closeout phases of the project.
- Provide management of the budget and schedule for the full project.
- Provide management of safety and quality control for the full project.

Budget and Funding Source:
The PBC budget for this project is $144,019. The funding source for this Program will be as identified in the attached Exhibit A-2 Form of Project Undertaking Requests – Additional Projects.

Schedule:
We anticipate the project to be completed by December 2016.

	Projected Start	Projected Completion
CPD Facial Analytics Subscription Renewal	January 2016	December 2016

OEMC Camera Infrastructure Program
CPD Facial Analytics Subscription Renewal 2016 – Undertaking #97
Undertaking Request
November 17, 2015

If this Undertaking scope, schedule and budget meet your approval, please sign below as well as the attached project budget and return the original copies to the PBC. **In order to take this project Undertaking to the January 12, 2016 PBC Board meeting for approval, the PBC respectfully requests OEMC approve and return Undertaking letter and budget by December 18, 2015.**

Please contact me at 312-742-0878 if there are any questions regarding the project or information provided.

Sincerely,

Ivan Hansen
Director of Infrastructure & Special Projects

Attachments:
    Project Undertaking Budget
    Exhibit A-2 Form of Project Undertaking Requests – Additional Projects, CIP #95

cc: Ruben Madrigal, OEMC   Felicia Davis, PBC
     Frank Lindbloom, OEMC
     Beth O'Reilly, OBM

APPROVAL OF UNDERTAKING SCOPE,   APPROVAL OF UNDERTAKING FUNDING:
SCHEDULE AND BUDGET:

_____   _____
Gary Schenkel   Date: **Alexandra Holt   Date:**
Executive Director   **Budget Director**
Office of Emergency Management & Communications   **Office of Budget and Management**

FORM OF PROJECT UNDERTAKING REQUESTS

ADDITIONAL PROJECTS

Name of Project: Camera Infrastructure Program Undertaking #CIP UT 97

Type of Project: Security Camera Project

Location of Project: City of Chicago

Project Scope of Work: This project consists of the renewal of the current Facial Matching Analytics subscription previously installed software located within the City of Chicago through December 31, 2016.

Authorized OEMC Representative: Ruben Madrigal, Deputy Director ISCN

Authority (Describe Appropriation Ordinance and Date of Adoption):

OEMC -please provide Description of Appropriation Ordinance and Date of Adoption for each funding source noted below.

Source(s) of Funds [Specify Applicable Grant or Other Source of Funds]:

- **CPD Facial Matching Analytics Subscription Renewal 2016 –**

- Fund Source: -

- Fund Strip:

- Funding Expiration Date:

Maximum Amount of Funds: $ 144,019.00

Schedule: January 2016 – December 2016

Special Terms and Conditions:

_____

OEMC –Executive Director

_____

OBM –Budget Director

**ROGER BALDWIN FOUNDATION
OF ACLU, INC.**

October 18, 2016

Rahm Emanuel, Mayor
Office of the Mayor
121 N. LaSalle Street
Chicago City Hall 4th Floor
Chicago, IL 60602
Fax: 312-744-2324

Eddie T. Johnson, Superintendent
Chicago Police Department
3510 S. Michigan Avenue
Chicago, IL 60653
Fax: 312-745-6963

Dear Mayor Emanuel and Superintendent Johnson,

We are writing because the Chicago Police Department's ("CPD") face recognition policies are wholly inadequate to protect the rights of individuals in Chicago. The use of this technology represents a threat to the privacy to over 117 million American adults, whose driver's license and ID photos may regularly be subject to face recognition searches without their consent or even knowledge. In particular, a report issued today by the Center on Privacy & Technology at Georgetown Law ("the report") found that the use of face recognition is likely to have a disparate impact on racial and ethnic minorities, and, in particular, African Americans. Thus, we urge you to issue a moratorium on the use of face recognition until appropriate safeguards can be put in place. Such safeguards should include explicit legislative consideration of whether to approve the use of this new, invasive technology.

According to the report, CPD has the ability to conduct face recognition searches against databases containing mugshots, and may also have the ability to conduct searches against the driver's license and ID photos of everyone in Illinois. Despite its widespread capabilities, however, CPD's face recognition system lacks even baseline oversight, accountability, or transparency requirements, raising First and Fourth Amendment concerns. CPD's face recognition has apparently never been audited for misuse, bias, or inaccuracy. In addition, there appears to be no requirements that restrict searches to serious crimes where law enforcement has reason to believe that someone has committed a crime. Moreover, CPD does not have a policy that expressly prohibits officers from using face recognition to track individuals engaged in First Amendment protected activities.

Such a lack of safeguards is stunning given the growing evidence that face recognition in its current form is not simply a neutral investigative tool – but rather can be a biased technology that has a disparate impact on racial and ethnic minorities. A prominent 2012 study, co-authored by an FBI expert, found that several leading face recognition algorithms were 5 to 10 percent

1

less accurate on African Americans, women, and young people aged 18 to 30 than whites, men, and older people.[1] Such inaccuracies raise the risk that, absent appropriate safeguards, innocent African Americans and others may mistakenly be placed on a suspect list or investigated for a crime solely because a flawed algorithm failed to identify the correct suspect.

The effect of these biased algorithms is compounded by the fact that African Americans and other racial and ethnic minorities are likely overrepresented in the mugshot database that CPD relies on for face recognition. Specifically, in Cook County, people of color are arrested at a rate almost twice as high as their share of the population.[2] Thus, they are more likely to be included in such a database, even if they were never charged or convicted of a crime. In addition, they may be disproportionately likely to have encounters to police that subsequently result in a face recognition search. Thus, face recognition is least accurate for the population that it is most likely to be used against.

Given the evidence of disparate impact, CPD should not continue to use face recognition technology without appropriate safeguards. Thus, we urge CPD to issue a moratorium on the use of this technology until the adoption of proper safeguards, including:

- **Legislative Approval:** A surveillance technology of this magnitude should not be used without explicit legislative approval, which permits adequate opportunity for community engagement. If the legislature is to approve use of the technology, legislation should explicitly require individualized suspicion for face recognition searches, require robust auditing for bias and accuracy, and provide a remedy in cases where individuals' rights are violated.

- **Robust Internal Audits:** Law enforcement agencies should conduct robust and regular internal audits of their face recognition systems. Such audits should assess algorithmic accuracy and bias on the basis of race, gender, and age. In addition, such audits identify instances of misuse, and monitor the frequency and purposes for which the technology is used.

- **Individualized Suspicion:** Searches of mugshots should require individualized suspicion of criminal conduct, and in cases not involving in-person encounters, should only be performed as part of felony investigations. Mugshot databases should be scrubbed to exclude individuals who were found innocent of a crime or had charges dropped or dismissed and assessed to ensure their accuracy.

- **Transparency:** The public and legislators have the right to know how law enforcement officials are using this new technology. Thus, law enforcement officials should publicly report statistics on how often face recognition is used, the race, ethnic, gender, and age breakdown of the people it is used against, and the number of times use of face

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[1] Brendan F. Klare et al., *Face Recognition Performance: Role of Demographic Information*, 7 *IEEE Transactions on Information Forensics and Security* 1789, 1797 (2012).
[2] http://www.icjia.state.il.us/sac/tools/DataProfiles/CriminalJusticeDataProfiles.cfm?ProfileNumber=10&ICJIANumber=1088&getProfile=1.

recognition leads to an arrest or prosecution. In addition, any audits of face recognition systems should be made public.

- **Restriction on the use of Civilian Databases:** Individuals should not have to sacrifice their privacy simply to obtain a driver's license. Indeed, law enforcement use of civilian databases for face recognition sets a dangerous precedent – opening the door to the possibility that sensitive information collected for non-law enforcement purposes can be routinely searched by police. Such a precedent could apply to other types of information, such as library, financial, or medical records. Thus, there should generally be a prohibition on the use of civilian databases for face recognition.

- **Prohibition on Real-Time Use:** Real-time face recognition would fundamentally redefine the privacy of individuals in public spaces, allowing the government to track large numbers of individuals in real-time. As the Supreme Court noted in *Jones*,[3] such data can provide insight into the most intimate details of individuals' lives, including visits to a doctor, place of worship, or political campaign office. Thus, real-time face recognition should be prohibited, unless it is a true emergency and surveillance is limiting in duration, geography, and scope.

- **First Amendment Protections:** The use of facial recognition has the potential to chill free speech. Thus, law enforcement agencies should be prohibited from using face recognition technology on individuals based on their First Amendment-protected activities.

Very truly yours,

Karen Sheley
Director, Police Practices Project

cc: Stephen R. Patton, Corporation Counsel
        City of Chicago
        121 N. LaSalle Street, Suite 600
        Chicago, IL 60602
        (via email at Stephen.Patton@cityofchicago.org)

        Charise Valente, General Counsel
        Chicago Police Department
        3510 S. Michigan Avenue
        Chicago, IL 60653
        (via email at Charise.Valente@chicagopolice.org)

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[3] U.S. v Jones, 132 S.Ct. 945 (2012).

Rahm Emanuel
Mayor

Department of Police · City of Chicago
3510 South Michigan Avenue · Chicago, Illinois 60653

Eddie T. Johnson
Superintendent of Police

November 10, 2016

Karen Sheley
Director, Police Practices Project
Roger Baldwin Foundation of ACLU, Inc.
Suite 2300
180 North Michigan Avenue
Chicago, Illinois 60601

Dear Ms. Sheley:

I am in receipt of your letter dated October 18, 2016 regarding the Chicago Police Department's (CPD's) use of facial recognition technology. CPD is committed to keeping our communities safe through a variety of crime reduction strategies, including advances in technology, while safeguarding individuals' privacy and other legal rights. Accordingly, we welcome the opportunity to provide you with information regarding our limited use of facial recognition technology as an additional investigative tool for our Department members.

As I am sure you are aware, the Georgetown Study provides specific recommendations regarding the use of facial recognition technology by law enforcement agencies. At present, CPD is following the majority of these recommendations. CPD uses facial recognition technology only in cases where a criminal predicate (or reasonable suspicion of a criminal predicate) exists. The only databases CPD uses are those containing locally obtained "mugshots." CPD does not use the FBI's mugshot database, and it does not use civilian databases, such as driver's license and ID photo databases. Moreover, when arrests are properly expunged through the Court system, those mugshots are removed from the databases used by CPD. Finally, CPD does not use facial recognition technology in real time-situations, and it does not use it during First Amendment-protected gatherings.

The Georgetown Study also recommends that law enforcement agencies are transparent in their policies regarding facial recognition technology and conduct internal audits regarding their use of this technology. To comply with these recommendations, and to help the public better understand our use of facial recognition technology, we are in the process of rewriting our directive to reflect how we use this technology. We will provide you with a copy of our revised directive once it becomes available. As to internal audits, we log every use of this technology, and are in the process of enhancing our internal audit process. In particular, the CPD's Crime Prevention Information Center ("CPIC") is the primary source within the Department that receives requests for information ("RFI") for facial recognition technology. Once an RFI is received by CPIC, these requests are audited internally to ensure such a request is for lawful investigative purposes.

Please feel free to contact me with any questions or if you wish to discuss this matter further.

Sincerely,

Charise Valente
General Counsel

Rahm Emanuel
Mayor

Department of Police · City of Chicago
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Sincerely,

Charise Valente
General Counsel

Emergency and TTY: 9-1-1 · **Non Emergency and TTY:** (within City limits) 3-1-1 · **Non-Emergency and TTY:** (outside City limits) (312) 746-6000

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